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THE JOURNAL

OF THE

American Medical Association

SEPTEMBER 11, 1954

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THE JOURNAL of the American Medical Association is published weekly by the American Medical Association. Subscription price, $15.00 a year, 45c a copy. Canadian $17.00. Foreign $21.50. Entered as second class matter June 25, 1885, at the Postoffice at Chicago, Ill., under act of March 3, 1879. Address all communications to American Medical Association, 535 N. Dearborn St., Chicago 10, Illinois

THE JOURNAL

of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 156, NO. 2 — CHICAGO, ILLINOIS — SEPTEMBER 11, 1954

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THE GENERAL PRACTITIONER AND THE MEDICAL SCHOOL

E. Grey Dimond, M.D., Kansas City, Kan.

This paper outlines efforts being made at the University of Kansas Medical School to develop a program that maintains for the university the great value of the specialties as an administrative framework, as the backbone of residency training, and as a means of maintaining high standards for consultation and referral practice, and, concurrently, a program providing a large role for the general practitioner.

The methods being used are extramural and intramural preceptorships, postgraduate and circuit courses, and the appointment of general practitioners to the full-time staff. These are not "planned" or "projected," but are major, established functions of the school.

PRECEPTORSHIPS

Extramural.—All senior students are required to spend from five to six weeks as preceptees (fig. 1). A panel of general practitioners selected by a committee of the state medical society is submitted to the school, and from this list suitable preceptors are chosen. The preceptor is selected only from towns of 2,500 population or less and must be a "solo" practitioner. Although the school recognizes that all of our students are not planning to be general practitioners, and some have well-made plans for research or a specialty, no other form of preceptorship is permitted. This is to be an experience in "pure" family practice. Understandably, the school has had requests from clinic groups, from general practitioners in cities, and from specialists, but the school has felt that the fundamental plan—to give every student an exposure to life as a family physician—could be best achieved by not making exceptions. The success of the program has been strengthened by insistence on this "no exception" rule.

The practitioner has the responsibility of providing room and board for the preceptee. No salary is permitted. The lodging is provided in the physician's home by about half the preceptors; others have arranged quarters in a garage apartment, a room at the office, or in a local hotel. The exact relationship between the student and physician varies widely. Some of the students become a true member of the family—living in the home, eating every meal with the preceptor, making every house call, getting up for every emergency with him. The preceptor is charged with the responsibility of supervising the student's activities; the preceptor must not consider the student as his associate and send him on house calls and emergencies alone. The student assists him in every way, but the preceptor must not consider the student as a locum tenens. Because such a detailed experience can be a burden, not only for the physician, but for his wife, the school tries to rotate the responsibility among the preceptors, allowing a "breather" before the next student.

Why was the period of five to six weeks selected? First, this is a fair share of the curriculum time. Although the school is anxious for the student to have this opportunity, it still realizes that other units in the curriculum have merit and deserve their proportionate time. Secondly, present day seniors are usually married, and more than a month is a long period of time for them to be away from their wife and children. And thirdly, having a young student living in your home, and stalking your every activity, is exhausting for the physician and his wife. Why not allow the preceptorship to be an elective, with the student free to chose or reject it? The school believes that the concept of preceptorship has such merit that it deserves a full curriculum status, as do surgery, pediatrics, etc. Further, preceptorship, when a formal part of the curriculum, has dignity and stature; as an elective, it is tantamount to the school's saying, "Take it if you want, but look at the choice courses you might take if you stay here at the medical school!" As an elective, it places the preceptor and the school in competition for the student's favor.

Intramural.—The program described above provides an opportunity for the physicians in small towns to take part in the teaching; however, the general practitioners in the urban community of the school are excluded by the requirements restricting town size. In an effort to

Chairman of the Department of Medicine, University of Kansas School of Medicine.
Read before the Section on General Practice at the 103rd Annual Meeting of the American Medical Association, San Francisco, June 23, 1954.

give this group a medical school affiliation, the school has invited the Kansas City Academy of General Practice to present a panel of local general practitioners, and from this the school has selected a group of intramural preceptors. These men have been assigned the responsibility of staffing the outpatient medicine clinic one morning each week. To this clinic, senior students are

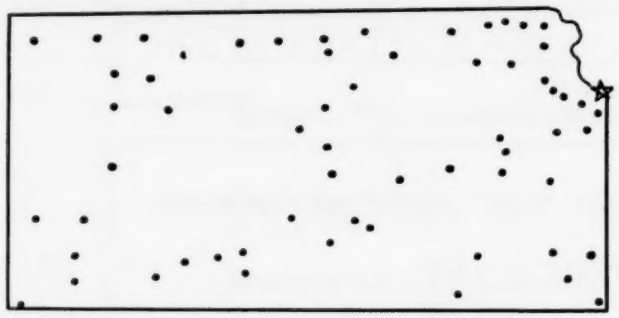

Fig. 1.—Kansas towns in which senior medical students served with general practitioners in 1953.

assigned. Each student is provided with a small office and examining equipment. The initial history and examination is done by the student, then reviewed by the preceptor. Each preceptor sees approximately five patients in a morning and continues on the service for three months.

CIRCUIT COURSES AND POSTGRADUATE INSTRUCTION

Traditionally, the school's responsibility ended on the student's graduation. Proof of his knowledge was determined by a state licensing agency; his continuing education was his own responsibility. Various organizations—county, state, and national—offered him educational opportunities. Certain medical schools in the United States and abroad became recognized postgraduate centers. Strangely enough, the physician's own university, with all of its facilities, assumed a very minor responsibility. It is in this area that the medical school of today and tomorrow will make its greatest contribution. The four year exposure to the mass of knowledge offered prior to the degree is but a small share of the total years of active practice remaining. It is during these practice years that the physician's regional medical school must make available to him continuing opportunities for medical education.

The physician will continue to learn from experience and from his "practice," but changing techniques and new knowledge make medicine a flowing, changing event. No medical school curriculum should concern itself with the responsibility of teaching "all" of the scope of medicine. The school succeeds if it shows the student how to approach a patient's problem, how to assay data, what it means to be allowed to be a physician, how to use a library, and how to do critical thinking. After the student's graduation, the school's postgraduate division should assume the obligation of filling in the framework, of offering opportunities for study in special fields, and of maintaining "refresher" programs.

The inclusion of general practitioners throughout the state in a preceptor program serves to awaken and maintain this desire for postgraduate education. Forty-nine of our 62 preceptors were enrolled in postgraduate courses at the University of Kansas Medical Center in 1953. Here would seem to be a true example of "continuing" education.[1] The University of Kansas Medical Center has attempted to meet this responsibility in several ways. The center has assumed a regional responsibility for postgraduate education and is enrolling in its courses physicians primarily from the Kansas, western Missouri and Iowa, eastern Nebraska, northern Oklahoma and Arkansas area. As evidence of the vigor of the program, more physicians enrolled in 1953 in postgraduate courses at the University of Kansas Medical School than any other medical school in the United States. The postgraduate techniques can be outlined as circuit and postgraduate courses.

Circuit Courses.—Over a period of years, members of the staff, in teams of two, have toured defined circuits over the state of Kansas (and recently Missouri). Each tour lasts one week; each man speaks twice a day. An advance agent proceeds the pair, arranging location, accommodations, and enrollment. The route of the circuit is chosen each year by a committee from the state medical society, the state board of health, the Academy of General Practice, and the school. Enrollment in such courses was 489 in 1953-1954 (fig. 2).

Postgraduate Courses at the School.—Complementing the circuit course, but offering instruction based on clinical material and freely using nationally known guest lecturers, each department and section of the school is responsible for arranging and presenting courses at the school. The courses vary in length from two to five and a half days. In 1953-1954, 21 such courses were given, covering such fields as anesthesia, radiology, auscultation, pediatrics, and hematology, with 1,730 physicians in attendance.[2] A separate auditorium, seating 100, is maintained for this program, and the school has recently completed a suite of hotel room accommodations, providing quarters on the campus for the participants.

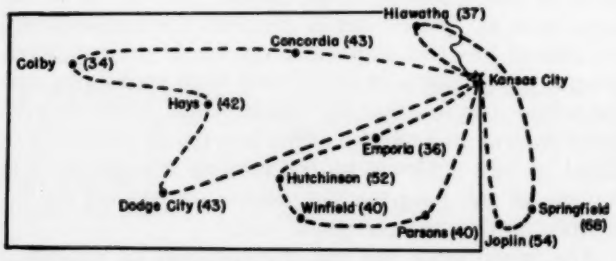

Fig. 2.—Route of three 1953 circuit courses with physician attendance indicated.

GENERAL PRACTITIONERS ON FULL-TIME STAFF

Although the school has been successful in incorporating general practitioners into its teaching program and in providing them with opportunities for continuing education, it was felt advantageous to have a general practitioner as an actual member of the full-time staff. By this means, the preceptors would be provided with a spokes-

1. Delp, M. H.: In the Objectives of Postgraduate Medical Education, panel discussion before the Congress on Medical Education, Chicago, Feb. 8, 1954.

2. University of Kansas Medical School Post Graduate Education Bulletin, Kansas City, Kans., University of Kansas, 1953.

man at the school, and the school would be provided with a man with the proper background to supervise properly the preceptor program, both extramural and intramural. Furthermore, such a man would act as an experienced guide in planning circuit course programs. Because general practitioners and internists each provide "family physician" care, the department of medicine proves the ideal place to integrate a general practitioner into the administrative framework and into undergraduate teaching. Such a physician has been on the staff during the past year; he has had formal responsibility for the preceptor programs and is a member of the postgraduate division.

BENEFITS OF THE PROGRAMS

Benefits to the Student.—The extramural preceptor program provides the student with a sample of true family practice; here he actually experiences an important feature of medical care, the patient-physician relationship. He sees patients in the home environment, he sees patients with a social status similar to those for whom he will provide care during his own practice days, and he sees the total patient, as a member of a family and community. The school believes the preceptorship supplies a more accurate sample of what is meant by "total patient care" than any other means. Other schools have utilized such techniques as assigning students to families or persons selected from their welfare clinics. Such techniques are artificial, exposing the student to unreal and unlikely environmental factors. The preceptorship is a true sampling of the practice of medicine. The student learns the economics of medicine, the politics of medicine; his wife often accompanies him on the preceptorship and gains, for the first time, an awareness of the role of the physician's wife.

Benefits to the State.—It is difficult to document the number of students that the preceptor program has actually attracted to the more rural areas of Kansas. How many might have gone into the region without the program, how many have been dislocated by military service, how many decided against general practice after actually seeing the general practitioner's problem—these are all factors that make any statistical analysis inaccurate. However, two arithmetic items are significant. First, in Kansas towns of 1,000 or less, 220 additional general practitioners have begun practice. For the previous 50 years, there had been a yearly loss of physicians from these Kansas areas. Second, in the years 1900 to 1950, Kansas consistently lost more physicians than it gained. In 1950, and again in 1951, Kansas gained 100 physicians. The citizens of the area have certainly benefited from the "continuing" education of the preceptors. Extension of the postgraduate efforts to include lay education programs will further benefit the citizens.[3]

Benefits to the Physician.—The student serves as a vital stimulus to the physician. The student fresh from the school brings ideas and questions that provoke thought and reading. The physician seeks postgraduate education. In 1953-1954, 79% of the preceptors were enrolled in courses at the University of Kansas alone. Of the 1,730 physicians enrolled for postgraduate courses given by the school, 991 were from the state of Kansas (total physicians in state, 2,100). The number enrolling elsewhere would increase this percentage. The practice of medicine gains new excitement when it is combined with the responsibility of teaching.

Benefits to the School.—The school benefits in several ways. First and primarily, the mission of the school, to prepare physicians for the particular needs of its own geographical area, is more adequately realized. A further mission of the school, to provide continuing education for its regional physicians, is certainly achieved. A third benefit, intangible but real, results. The practitioners throughout the region, as members of the teaching staff and as participants in continuing education, give the school their enthusiastic support. Anyone familiar with the problems of a medical school can appreciate the value of enthusiastic and loyal regional physician support.

COMMENT

A medical school has certain obligations. Two of these are the preparation of physicians for "family care" and the continuation of the physician's education during his practice years. To meet these obligations, the University of Kansas Medical School has set up a program including extramural and intramural preceptorships, postgraduate and circuit courses, and appointment of general practitioners to the full-time staff. Benefits to the student, the state, the physician, and the school have been shown. For the future, general practice residencies and staffing of the postgraduate division are logical additions to the program.

3. Wescoe, W. C.: Responsibilities of the Medical School to the State It Serves, Missouri Med. **50**: 841 (Nov.) 1953; Your School of Medicine, J. Kansas M. Soc. **54**: 63, 1953.

Renal Insufficiency.—Renal lesions . . . once thought irreversible have in many instances proved to be highly reversible. While renal function in these instances has not always been completely recovered . . . it has been sufficiently restored to allow a return to normal life—women have been able to undertake pregnancy and men to resume their activities as breadwinners. Probably the greatest stimulus to the changing point of view has been the increased knowledge derived from the study of acute tubular necrosis (so-called "lower nephron nephrosis"), which, while indeed serious and in many instances fatal, is susceptible of remarkable healing. If after its onset an internal environment compatible with life can be maintained, renal tubular repair will begin, and if sufficient time can be gained, resumption of renal function will occur. In acute tubular necrosis, "time" for healing has been gained . . . by use of extracorporeal artificial kidneys, transperitoneal lavage, conservative medical means, and by other measures. . . .

If acute lesions can heal, it seems logical to assume that chronic lesions also may heal, provided there is sufficient time to do so and that further injury can be prevented. . . . As with acute lesions, meticulous attention is directed to the restoration of distorted chemical patterns resulting from renal insufficiency. Particular attention is focused upon reëstablishing the fluid and electrolyte balance so necessary to normal physiologic function. The progress of many patients with chronic renal insufficiency . . . seems to support the idea that some healing does occur. . . . A physician who disavows the challenge of treating renal insufficiency, regardless of its duration, fails in his obligation, since he may lose the opportunity of bringing about a cure or at least adding years to the patient's life—J. Hopper Jr., M.D.; A. Bolomey, M.D., and R. Wennesland, Chronic Renal Insufficiency. Part I: Appraisal of the Patient. Part II: Treatment, *Annals of Internal Medicine*, July, 1954.

HEPATITIS FOLLOWING THE INGESTION OF PHENYLBUTAZONE

Ephraim P. Engleman, M.D., Marcus A. Krupp, M.D.
James F. Rinehart, M.D., San Francisco
Capt. Robert C. Jones
and
Major John R. Gibson, (MC), U. S. Army

Many of the toxic reactions to phenylbutazone have been reported previously; these have included edema [1] and toxic effects on the skin,[2] gastrointestinal tract,[3] hematopoietic system,[4] central nervous system,[2a] heart,[5] and probably the eye.[5a] The possibility of deleterious effects of phenylbutazone on the liver has not been publicized adequately. The following case reports illustrate the potential severity of such complications.

REPORT OF CASES

CASE 1.—A 78-year-old white housewife was hospitalized on Nov. 28, 1952, because of jaundice of four days' duration. For some 40 years she had complained of multiple joint pains, which were caused by degenerative joint disease, especially of the hips. On Oct. 16, 1952, phenylbutazone therapy was started in a daily oral dose of 800 mg. Symptomatic improvement was noted. On or about Nov. 1 she experienced mild abdominal pain, which persisted until her entry into the hospital. On Nov. 15, she first noted that her urine was darker than normal. Jaundice was observed on Nov. 25, and phenylbutazone therapy was discontinued the same day. Three days later she was hospitalized.

The patient had received no injection for at least six months previous to this illness. She had never been given transfusions or exposed, to her knowledge, to persons with jaundice or to any known hepatotoxin. At the age of 19 she had had jaundice for four days. Her history was otherwise noncontributory. On the patient's admission into the hospital, physical examination showed an obese woman who was moderately icteric. The temperature was 98 F, pulse rate, 72 beats per minute, and blood pressure, 150/80 mm. Hg. Motion of both hips was markedly restricted. A smooth, soft, and slightly tender liver edge was palpable 4 cm. below the right costal margin in the midclavicular line. No other physical abnormality was present.

Hospital Course.—The patient's general condition was fairly stationary for about one week. Treatment included a high protein diet and administration of supplemental vitamins. On Dec. 6, the patient's condition deteriorated; profound anorexia, nausea, frequent emesis, and increasingly severe abdominal pain were noted. She was maintained thereafter on parenteral fluids. Her subsequent course was progressively downhill with increasing jaundice. On Dec. 8, she showed signs of congestive heart failure, for which she was digitalized. On Dec. 12, she became irrational and semicomatose and had only semilucid intervals thereafter. She was afebrile throughout her hospitalization, except for the period from Dec. 7 through Dec. 10, when her temperature rose but did not exceed 100 F. She died Dec. 15.

Laboratory Data.—On Nov. 29, the packed cell volume (PCV) was 35 cc. %; hemoglobin, 11.8 gm. per 100 cc.; white blood cell count, 8,100 per cubic millimeter with 71% polymorphonuclear cells and otherwise normal differential count; and corrected sedimentation rate (Wintrobe), 38 mm. at the end of one hour. Urinalysis showed normal results except for the presence of bilirubin (1+). The serologic test for syphilis was negative. On Dec. 2, the PCV was 40 cc. %; hemoglobin, 10.4 gm.; erythrocytes, 3,300,000 per cubic millimeter; leukocytes, 7,250 per cubic millimeter with 78% polymorphonuclear cells; platelets, 112,000 per cubic millimeter (normal, 250,000 to 300,000); and bleeding and clotting times, normal. On Dec. 8, the PCV was 37 cc. %; hemoglobin, 10.0 gm.; white blood cell count, 9,550 with 77% polymorphonuclear cells; and corrected sedimentation rate (Wintrobe), 44 mm. at the end of one hour.

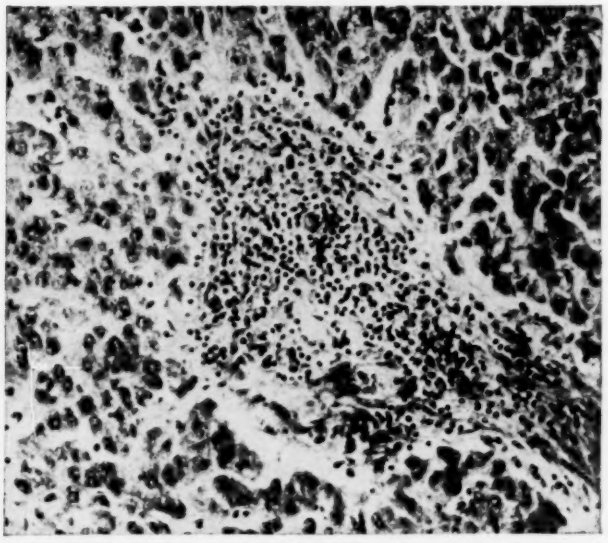

Fig. 1.—Section of liver of patient reported on in case 1. Liver cells show degenerative changes, and some appear to be necrotic. Delicate strands of fibrous tissue extend from the portal space, adjoining which there is some cellular infiltration.

Liver function studies on Dec. 1 showed thymol turbidity value, 5 units; thymol flocculation, none; zinc sulfate turbidity, 6 units; cephalin flocculation, none in 48 hours; serum bilirubin, 5.7 mg. per 100 cc. in 1 minute, 8.4 mg. in 30 minutes; serum alkaline phosphatase, 29.7 S., J. & R. (Shinowara, Jones, and Reinhart) units; serum cholesterol, 752 mg. per 100 cc.; total serum protein, 6.3 gm. per 100 cc., with albumin 3.2 gm. and globulin 3.1 gm.; and prothrombin time, 81% of normal. On Dec. 4, the serum cholesterol level was 1,026 mg. On Dec. 7, a two hour urine urobilinogen test showed 2.36 Ehrlich units. On Dec. 8, the tests showed thymol turbidity, 5 units; thymol flocculation, none; zinc sulfate turbidity, 5 units; cephalin flocculation, none in 48 hours; serum bilirubin, 7.3 mg. in 1 minute and

From the Medical Service of the Veterans Administration Hospital, the Department of Medicine and Pathology, University of California Medical School, and the Department of Medicine, Stanford University School of Medicine, San Francisco.

Dr. Albert W. Snell aided in the preparation of this paper.

1. Hemming, A., and Kuzell, W. C.: The Pharmacologic and Clinical Characteristics of Phenylbutazone (Butazolidin), Antibiotics & Chemother. **3**: 634 (June) 1953.

2. (*a*) Kuzell, W. C., and others: Phenylbutazone: Further Clinical Evaluation, A. M. A. Arch. Int. Med. **92**: 646 (Nov.) 1953. (*b*) Fishman, H. C., and Reynolds, J.: Exfoliative Dermatitis Following Ingestion of Phenylbutazone (Butazolidin), J. A. M. A. **153**: 642 (Oct. 17) 1953.

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12.8 mg. in 30 minutes; prothrombin time, 66% of normal; serum protein, 6.5 gm., with albumin, 3.0 gm. and globulin 3.5 gm.; serum cholesterol, 986 mg.; and alkaline phosphatase, 40.2 S., J. & R. units.

A liver biopsy, which was performed on Dec. 3, was compatible with a diagnosis of cholangiolitic hepatitis with no evidence of hepatic biliary obstruction. A roentgenogram of the chest on Dec. 1 showed pulmonary congestion and edema with possible hypostatic pneumonia at the right apex. Attempts to visualize the gallbladder failed on two occasions.

Autopsy.—At autopsy, the significant alterations were noted in the heart and liver. The coronary vessels showed extensive arteriosclerosis, while old and recent infarcts were seen in the myocardium. These were believed to be the immediate cause of death. The liver weighed 1,815 gm. and was dark brown and firm. The sectioned surfaces of the liver bulged in some areas, and extensive mottling was noted throughout. Microscopic sections of the liver showed infiltration of the portal spaces with polynuclear and mononuclear leukocytes. Projecting from the portal spaces were septal strands of fibrous tissue, which were also infiltrated with inflammatory cells. Adjoining liver cells showed degenerative changes, and a smaller number were necrotic. These pathological alterations are those of an acute toxic hepatitis (fig. 1).

CASE 2.—A 40-year-old housewife consulted her physician on Dec. 30, 1952, because of pain in the left shoulder of several days' duration. A diagnosis of bursitis was made. The patient's history was entirely noncontributory. She had never had gastrointestinal symptoms or jaundice. She had never received parenteral injections or transfusions, and she was not aware of exposure to hepatotoxins or to anyone with jaundice. Phenylbutazone therapy, with doses of 200 mg. three times daily, was started on Dec. 30, 1952. On Jan. 2, 1953, the use of phenylbutazone was discontinued because of severe nausea and vomiting. During the next few days the patient complained of malaise, anorexia, and vague epigastric distress without relation to meals. On Jan. 12, icterus was first noted. Jaundice increased progressively and reached its maximum on Jan. 31, when the stools were totally clay-colored. Treatment consisted of rest and a high carbohydrate, high protein, low fat diet with supplemental vitamins. Her subsequent course was one of slow improvement and was generally uneventful. A biopsy of the liver was done on Feb. 8. Jaundice gradually receded, and by March 2, 1953, the patient looked and felt normal and has continued to do so ever since.

Laboratory Data.—On Jan. 24, 1953, the cephalin flocculation was 1+ in 48 hours; icterus index, 92; urine urobilinogen, 1+, undiluted (slightly reduced). On Jan. 31, the icterus index was 125. On Feb. 2, the blood level of phenylbutazone was 2.36 mg. per 100 cc. (control studies ruled out a false determination because of icterus). On Feb. 4, the hemoglobin level was 13.2 gm. per 100 cc.; red blood cell count, 4,280,000 per cubic millimeter; and white blood cell count, 7,900 per cubic millimeter with 79% polymorphonuclear cells. The urine contained bile. The urinary urobilinogen test was positive, 1:10; cephalin flocculation, 3+ in 24 hours and 4+ in 48 hours; thymol turbidity, 17 units; icterus index, 102; serum bilirubin level, direct, 12.7 mg. per 100 cc. and indirect, 18.8 mg. per 100 cc.; serum cholesterol, 178 mg. per 100 cc.; cholesterol esters, 68%; serum alkaline phosphatase, 6.2 King-Armstrong units; serum protein, 6.2 gm. per 100 cc.; albumin, 3.5 gm. and globulin, 2.7 gm.; and prothrombin concentration, 100%. On Feb. 6, the icterus index was 76 units. On March 2, the hemoglobin level was 12 gm.; white blood cell count, 4,950 with 59% polymorphonuclear cells; urine urobilinogen, positive 1:20; icterus index, 22; serum bilirubin, 4.7 mg.; cephalin flocculation, 3+ in 48 hours. On April 16, the icterus index was 7; serum bilirubin, 1.25 mg.; and urine urobilinogen, positive, dilution 1:20. On April 29, the cephalin flocculation was 3+ in 48 hours; icterus index, 5; thymol turbidity, 4.5 units; zinc turbidity, 11 units; serum bilirubin, direct, 0.31 mg. and indirect, 0.37 mg.; serum protein, 5.4 gm.; and albumin, 4.3 gm. and globulin, 1.1 gm. %.

Roentgenograms on Feb. 4, 1953, showed no abnormalities in the chest; an upper gastrointestinal tract series showed a constant duodenal deformity with an ulcer crater at its center. Local pressure showed no tenderness. On April 30, 1953, a gastrointestinal series showed healing of the previously noted duodenal ulcer with residual scar.

Section of the liver biopsy specimen, performed on Feb. 8, showed slight cellular infiltration of the portal spaces and evidence of hepatocellular injury in the presence of shrunken, swollen, and degenerating cells. Some cells exhibited large hyperchromatic nuclei indicative of a regenerative response (fig. 2). Although less acute, this picture was similar to the toxic hepatitis seen in the patient reported on in case 1.

CASE 3.—A 62-year-old janitress complained of pain in the right shoulder of eight months' duration. Her history was noncontributory; she had never received parenteral injections or transfusions, and there had been no known exposure to persons with jaundice or to hepatotoxins.

The physical examination showed moderate obesity. The blood pressure was 160/100 mm. Hg. Findings were not otherwise contributory except for the right shoulder, which was moderately restricted in motion and painful. On May 2, 1952,

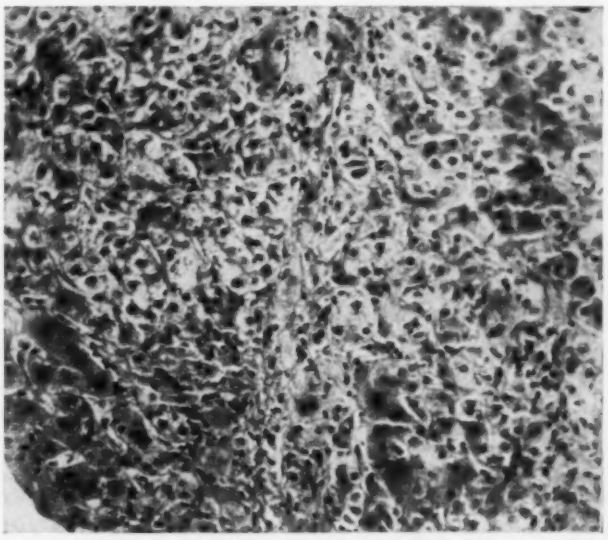

Fig. 2.—Section of tissue from liver of patient reported on in case 2. This section shows evidence of hepatocellular injury in the presence of shrunken cells, some showing nuclear chromatolysis.

she was started on a course of phenylbutazone, 200 mg. four times daily. Subjective improvement occurred almost immediately. The symptoms recurred when the dosage was reduced. She was consequently maintained on a daily dose of 800 mg. On May 24, she complained of malaise, headache, upper abdominal discomfort, and rash. The use of phenylbutazone was discontinued immediately. Examination showed a morbilliform eruption over the extremities. The temperature was within normal limits. Mild icterus was noted. The abdomen showed no abnormalities; the liver and spleen were not palpable. A high carbohydrate, high protein, low fat diet and rest were prescribed. Within the next few days, the patient continued to experience general malaise and abdominal discomfort, and the icterus increased somewhat. On or about June 1, 1952, she felt improved, and her subsequent course was one of progressive improvement. By June 26, she felt well and looked normal. At no time were the liver and spleen palpable.

Laboratory Data.—On April 28, 1952, the packed cell volume (PCV) was 38 cc. %; corrected sedimentation rate (Wintrobe), 11 mm. at the end of one hour; white blood cell count, 5,000 per cubic millimeter with polymorphonuclear cells 60%; and urinalysis within normal limits. On May 7, the white blood cell count was 6,400; May 14, 4,500; May 21, 4,000; and May 27, 6,000. Differential counts were consistently within normal limits.

On May 27, the hemoglobin was 14 gm. per 100 cc., and the urinary urobilinogen was positive at 1:10. The urine contained bile. On May 29, the serum bilirubin was 2.8 mg. direct and 1.0 mg. indirect; thymol turbidity, 16 units; and cephalin flocculation, none at 48 hours.

CASE 4.—A 63-year-old housewife complained of scattered aches and pains of several years' duration, which were believed to be due to degenerative joint disease. Her history was essentially noncontributory. She had received no parenteral injections or transfusions. There had been no known exposure to persons with jaundice or to known hepatotoxins. Physical examination was entirely normal, except for the presence of Heberden's nodes.

She was given phenylbutazone orally in a daily dose of 600 mg. starting on July 17, 1952. Symptomatic remission occurred, and the drug therapy was therefore stopped on July 29. By Aug. 6, symptoms had recurred, and phenylbutazone therapy was resumed, this time in a daily dose of 400 mg. On Aug. 11, a generalized morbilliform rash developed, and she complained of malaise and upper abdominal discomfort. Icterus was noted, and the drug therapy was stopped immediately. On examination, the patient showed obvious mild icterus. The liver and spleen

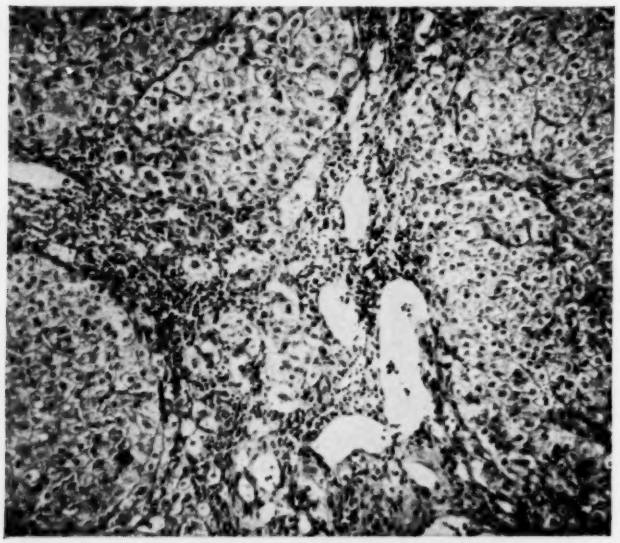

Fig. 3.—Section of liver of patient reported on in case 6. A representative section of the liver showing the characteristic appearance of so-called toxic cirrhosis.

were both palpable one to two fingerbreaths below the costal margin. The liver was slightly tender. The patient was treated with bed rest, high carbohydrate, high protein, low fat diet, and supplemental vitamins. Her clinical course was one of uneventful recovery. Within a few days, the liver and spleen were no longer palpable. By Sept. 1, 1952, she was recovered clinically.

Laboratory Data.—Repeated blood cell counts were within normal limits; the urine specimen contained bile. On Aug. 12, the icterus index was 41; urine urobilinogen, positive at 1:10; and cephalin flocculation, none. Additional icterus indices were as follows: 32, 29, and 17, on Aug. 14, 16, and 18, respectively.[6]

CASE 5.—A 55-year-old white female physical therapist was hospitalized on Oct. 6, 1953, because of jaundice of two days' duration. She had experienced recurrent joint pains due to degenerative joint disease since 1949. On Sept. 28, 1953, phenylbutazone, 0.1 gm. three times daily, was prescribed. On Oct. 4, she noted malaise, upper abdominal discomfort, light stool, and dark urine; jaundice was observed, and the use of phenylbutazone was discontinued.

For one year she had had symptoms of angina pectoris. During the past eight months she had complained of rapid fatigue. In April, 1953, six months prior to the onset of hepatitis, she was given three intramuscular injections of vitamin B_{12}. The syringes and needles had been sterilized in an autoclave. No other medicament had been administered parenterally. She had never received a transfusion. There had been no known exposure to hepatotoxins or to persons with jaundice.

On examination, the patient showed obvious icterus. The extremities were normal except for tenderness of the knees and the interphalangeal joints of the fingers. The remaining abnormal physical findings were limited to the abdomen. The liver was palpated four fingerbreadths below the right costal margin. Its edge was smooth and slightly tender. The spleen was not felt.

Treatment consisted of rest, a high protein diet, and administration of supplemental vitamins. For the first seven weeks her temperature varied between 98.6 and 101.6 F, and her course was one of progressive and intense jaundice. Subsequently she improved slowly, and her recovery was considered complete on Jan. 17, 1954, when physical and laboratory tests showed essentially normal results.

Laboratory Data.—On Oct. 6, 1953, the hemoglobin level was 13.1 gm. per 100 cc.; white blood cell count, 6,200 per cubic millimeter with a normal differential; packed cell volume, 41 cc. %; corrected sedimentation rate (Wintrobe), 40 mm. at the end of one hour; urinalysis, results within normal limits except for the presence of bile; blood Kahn test, negative, and Kolmer test, 1+; icterus index, 18 units; serum bilirubin, direct, 2.2 mg. per 100 cc.; indirect, 1.2 mg. per 100 cc.; cephalin flocculation, 4+; thymol turbidity, 14 units; prothrombin time, 50% of normal; alkaline prosphatase, 9 King-Armstrong units. On Oct. 26, the icterus index was 57; serum bilirubin, direct, 9.9 mg., indirect, 7.2 mg.; serum cholesterol, 238 mg., and cholesterol esters, 68 mg.; cephalin flocculation, 4+; thymol turbidity, 27 units; and prothrombin, 25% of normal. On Nov. 10, the icterus index was 44; serum bilirubin, direct, 3.6 mg., indirect, 4.1 mg.; cephalin flocculation, 3+ in 48 hours; thymol turbidity, 4 units; and prothrombin, 76% of normal. On Nov. 30, the cephalin flocculation was 2+ in 48 hours; icterus index, 15 units; prothrombin, 94% of normal; thymol turbidity, 12.8 units; and serum bilirubin, direct, 1.8 mg., indirect, 1.10 mg. On Dec. 15, the cephalin flocculation was 2+ in 48 hours; thymol turbidity, 9.4 units; icterus index, 11; prothrombin, 74% of normal; serum bilirubin, direct, 0.66 mg., indirect, 0.78 mg. On Jan. 4, the sulfobromophthalein (Bromsulphalein) test showed 6% retention in 45 minutes (normal, 3% retention); cephalin flocculation, 1+ in 48 hours; icterus index, 10; thymol turbidity, 11 units; and serum bilirubin, direct, 0.22 mg., indirect, 0.76 mg.

CASE 6.—A 60-year-old widow complained of pain in the hips of four years' duration due to degenerative joint disease of the hips. Her treatment had included vitamins given orally, local diathermy, and x-ray therapy. She had not, in the past year, received parenteral medication or transfusion. There was no known exposure to patients with jaundice or to hepatotoxins. Her history was noncontributory. Her intake of alcohol in recent years had consisted of two or three cocktails daily. Physical examination showed normal results except for marked restriction of both hips. On May 23, 1952, phenylbutazone was prescribed in a dose of 200 mg. three times daily. Because of inadequate symptomatic improvement, the dose was increased to 200 mg. four times daily on June 5. On June 15, the patient complained of nausea, vomiting, and upper abdominal pain; it was then that icterus was first recognized. Phenylbutazone was promptly withdrawn. Except for the icterus, physical findings were not remarkable. She was placed on a bed rest regimen and given a high carbohydrate, high protein, low fat diet and supplemental vitamins. Her subsequent clinical course was a stormy one. Jaundice progressed, reaching its maximum on or about June 28. On this date, the liver was palpable and firm. Although the jaundice receded during the next few weeks, her clinical course was manifested by severe nausea, emesis, and abdominal discomfort. On July 14, only slight icterus remained; however, spotty hemangiomas were noted over both arms, chest, and back. Pitting edema was present over both legs and the sacrum. The abdomen was distended and contained a massive amount of fluid. On July 22, 4,000 cc. of amber-colored fluid was removed from the abdomen. From July 24 to Aug. 13, she had repeated paracenteses. Hematemesis first occurred on

6. Dr. Edwin L. Bruck gave permission to include this case.

Aug. 7 and occurred repeatedly thereafter, necessitating multiple transfusions. Because of the increasing evidence of portal obstruction, manifested by repeated gross hematemesis and recurring ascites, a portocaval shunt was done on March 15, 1953, and a liver biopsy was obtained. The patient died in hepatic coma on April 4, 1953. Postmortem examination was not obtained.

Laboratory Data.—On June 27, 1952, the hemoglobin level was 11.2 gm. per 100 cc.; red blood cell count, 3,600,000 per cubic millimeter; and white blood cell count, 12,500 per cubic millimeter with a normal differential count. On June 28, the cephalin flocculation test was 4+ in 48 hours; serum bilirubin, 8.4 mg.; and icterus index, 43. On July 9, the hemoglobin was 10.2 gm. erythrocytes, 2,950,000 per cubic millimeter; and leukocytes, 15,100 per cubic millimeter with 72% polymorphonuclear cells. On Aug. 5, the serum protein was 5.7 gm.; albumin, 2.6 gm., and globulin, 3.1 gm.; and prothrombin time, 50% of normal. On Aug. 11, the red blood cell count was 1,800,000 per cubic millimeter and hemoglobin 6.1 gm.

Sections of the specimen of the liver, obtained on March 15, 1953, showed an appearance of irregular nodularity, which may be interpreted as a toxic cirrhosis (i. e., nodular regeneration following an extensive hepatocellular injury). Irregularly rounded nodules of liver cells were separated by bands of fibrous tissue, which were infiltrated with lymphocytes and plasma cells (fig. 3). At this time the liver cells were well formed and filled with glycogen.

Data Concerning Patients with Hepatitis, Which Followed Ingestion of Phenylbutazone

Case No.	Sex	Age, Yr.	Primary Diagnosis	Daily Dose of Phenylbutazone, Gm.	Days of Therapy	Days Between Start of Therapy and Onset of Jaundice	Other Manifestations of Toxicity of Phenylbutazone	Histological Findings	Result
1	F	78	Degenerative joint disease	0.8	40	40 (dark urine noted 10 days earlier)	Thrombocytopenia	Acute toxic hepatitis 20 days after onset of jaundice	Death in 20 days due to myocardial infarction
2	F	40	Bursitis	0.6	2½	13	Emesis; duodenal ulcer	Subacute toxic hepatitis 27 days after onset of jaundice	Recovery in 12 wk.
3	F	62	Painful shoulder	0.8	22	22	Morbilliform rash; leukopenia	.....	Recovery in 4 wk.
4	F	63	Degenerative joint disease	0.6 0.4	12 5	.. 25	..... Morbilliform rash	....	Recovery in 3 wk.
5	F	55	Degenerative joint disease	0.3	6	6	.....	.....	Recovery in 15 wk.
6	F	60	Degenerative joint disease	0.6 0.8	12 10	.. 22	....	Toxic cirrhosis 40 wk. after onset of jaundice	Portal obstruction; hepatic coma and death in 40 wk.

COMMENT

All the patients whose cases are reported were women (see table). There had been no known antecedent liver disease except that of the patient in case 1, who had had jaundice for four days 59 years previously.

Isolated instances of hepatitis following ingestion of phenylbutazone have been recorded by others.[7] It is generally agreed that the unpredictable occurrence of viral hepatitis makes its exclusion as a coincidental complication a difficult one. However, certain observations suggest strongly that the liver disease in the patients described here was that of a toxic hepatitis for which phenylbutazone was the major, if not the sole, contributory factor. None had had known exposure to persons with jaundice; none had received transfusions prior to the hepatitis; and none had received parenteral therapy within six months before the onset of hepatitis. All had been free of constitutional symptoms prior to the administration of phenylbutazone, with the exception of the patient in case 5, who had complained of rapid fatigue for eight months.

There had been no exposure to recognized hepatotoxins. The temporal relationship between the administration of phenylbutazone and the onset of hepatitis was notable. Jaundice appeared 6 to 40 days after the ingestion of the initial dose of the drug. In five of the six patients, the use of phenylbutazone was not discontinued until icterus appeared. Emesis forced cessation of phenylbutazone therapy 10 days before jaundice occurred in the sixth patient (case 2). Other manifestations of toxicity of phenylbutazone were present in four of the six patients.

Pathological studies showed a toxic hepatitis, acute in the patient in case 1, less acute in the patient in case 2. In both cases, the hepatic lesions were characterized by cellular necrosis and portal inflammation in which polymorphonuclear leukocytes were fairly prominent. The pathology differed from that of viral hepatitis in that the inflammatory reactions was primarily about the fine portal radicles and the hepatocellular injury appeared less marked. Sections of the liver obtained from the patient in case 6, 10 months after the onset of hepatitis, showed a toxic cirrhosis. Although this might follow any severe hepatocellular injury, its relationship with the administration of phenylbutazone cannot be ignored. It is concluded that phenylbutazone is potentially hepatotoxic; it follows, therefore, that hepatitis is another possible hazard in the therapeutic use of this drug.

655 Sutter St. (Dr. Engleman).

7. Steinbrocker, O., and others: Phenylbutazone in Therapy of Arthritis and Other Painful Musculoskeletal Disorders, J. A. M. A. **150**: 107 (Nov. 15) 1952 Kuzell and others.[2a]

Tuberculous Meningitis.—Three factors contribute to the unsatisfactory results that have been obtained in the treatment of tuberculous meningitis during the streptomycin era: mechanical obstruction of the circulatory channels of the cerebrospinal fluid by tuberculous exudate; the inability of antimicrobial agents to penetrate avascular tissue and reach tubercle bacilli buried therein; and the necessity of prolonged intrathecal therapy that may, of itself, produce local obstructions in the subarachnoid space by repeated irritation and trauma of the meninges. . . . All the newer measures devised to counteract these effects—namely, anticoagulants, intrathecal injection of tuberculin, fibrinolytic enzymes and neurosurgical procedures—have met with equivocal success.—S. J. Shane, M.D., and Clifford Riley, M.B., Ch.B., Tuberculous Meningitis: Combined Therapy with Cortisone and Antimicrobial Agents, *The New England Journal of Medicine*, Nov. 19, 1953.

CEREBELLAR SIGNS

Robert Wartenberg, M.D., San Francisco

As there are pyramidal signs that indicate disease of the pyramidal tract, so are there cerebellar signs that indicate disease of the cerebellum and its connections. While such cerebellar signs are numerous, many of them become manifest only when there is a marked functional defect of the cerebellum. When classical signs are evident, there is no need for special tests; the following signs may, however, reveal a cerebellar deficit in patients without obvious functional impairment or even without referable complaints. Patients with cerebellar lesions have been observed in whom these cerebellar signs were unmistakably present; however, until they have been rechecked on a large scale the last word on their differential diagnostic value cannot be spoken.

Fig. 1.—*A*, normal finger-to-nose test. *B*, finger-to-nose test performed against resistance. Note intention tremor and hypermetria.

ATAXIA

Ataxia Against Passive Resistance.—Examination for cerebellar function usually begins with the finger-to-nose test. The patient allows his arms to hang loosely at his sides. He is then asked to raise one arm slowly and to touch his nose with the tip of his index finger. The normal person performs this movement in a direct line. The manner in which some patients with multiple sclerosis, for instance, perform this test is familiar to all. Action starts normally, but increasing tremor develops as the finger approaches the nose. The finger finally comes to rest somewhere in the neighborhood of the nose. In such cases the marked cerebellar dysfunction usually becomes manifest in all casual movements of the patient, and special tests are hardly necessary. However, in cases in which disturbance of the cerebellum must be assumed on other grounds the finger-to-nose test may be performed normally. The question then arises how the finger-to-nose test can be reinforced. There are methods to reinforce reflexes: the quadriceps reflex, for instance, by Jendrassik's maneuver or by slight innervation of the quadriceps muscle. The following method to reinforce the finger-to-nose test may make latent ataxia manifest even when there is no clear-cut clinical evidence of cerebellar dysfunction. The patient performs the finger-to-nose test against slight passive resistance. A rubber band is placed around the patient's wrist, and one end, held by the examiner, is pulled gently as the patient performs the finger-to-nose test. In a still simpler version, the examiner puts his fingers on the volar surface of the patient's forearm and exerts slight resistance while the patient moves his arm toward his nose. The ataxia then becomes manifest (fig. 1). In figure 1*A* the patient performs the finger-to-nose test normally, as clearly shown by the light-tracer. In figure 1*B* the same movement is performed against the resistance of the examiner, who has placed his fingers on the patient's forearm. The light-tracer shows intention tremor and hypermetria. The patient fails to touch her nose and touches her brow instead. This case is one of olivopontocerebellar atrophy at a very early stage. Latent ataxia may similarly become evident in the lower extremity when the leg is moved against passive resistance.

Ataxia of the Lower Legs.—With the following sensitive test ataxia of the lower legs can be seen earlier and is more easily demonstrable and more conspicuous than with the time-honored Romberg test. The patient, lying prone, is asked to flex his legs at the knee and to keep them vertical. In the presence of a lesion of the pyramidal tract, the affected leg tends to drop; if there is a severe pyramidal or lower motor neuron lesion, the lower leg drops instantly like dead weight. A normal person can hold his lower legs steady or with minimal oscillation in this vertical position. With the slightest ataxia, the light-tracer shows marked unsteadiness of the lower legs (fig. 2). By this test not only cerebellar ataxia but ataxia of any origin can be demonstrated early and very clearly. In tabetic ataxia of the lower legs the oscillation of the legs is particularly marked. The static ataxic movements of the legs as shown by this test are more extensive than the swaying movements of the body as seen in the Romberg test.

DEVIATION

Arm Deviation.—In a simple test for arm deviation the patient, standing or sitting, stretches his arms horizontally forward. He is asked to keep them still and to close his eyes. On the affected side the arm slowly deviates outward. In unilateral disease this deviation is constant, even when the test is made repeatedly. The sign is not absolutely pathognomonic for cerebellar disease. If there is such deviation the cerebellum may be involved, but not necessarily so; deviation may be absent when the cerebellar nuclei but not the cerebellar hemispheres are involved. The importance of an abnormal

From the Department of Neurology, University of California School of Medicine.

finding in this test is that it may alert the examiner to a wider search for organic disease. Figure 3 illustrates the arm deviation. This is the same patient with olivopontocerebellar atrophy who showed intention tremor and hypermetria only when the finger-to-nose test was performed against resistance (fig. 1).

Leg Deviation.—In unilateral disease of the cerebellar hemisphere not only the arm but the leg as well shows a tendency to deviate outward. The patient, sitting on a chair, is asked to lift both outstretched legs and to hold them steady (fig. 4*A*). He is then asked to close his eyes. When the test shows abnormality, the leg on the affected side slowly deviates outward. The patient is unaware of this movement. Figure 4*B* illustrates the outward deviation of the left leg. This patient with chronic cerebellar tremor also showed outward deviation of the left arm.

ABDUCTION

Abduction Tendency of the Arms.—It is physiologically correct to say that in cerebellar disease there is a certain general tendency of the extremities toward spontaneous abduction. The typical stance of the patient with

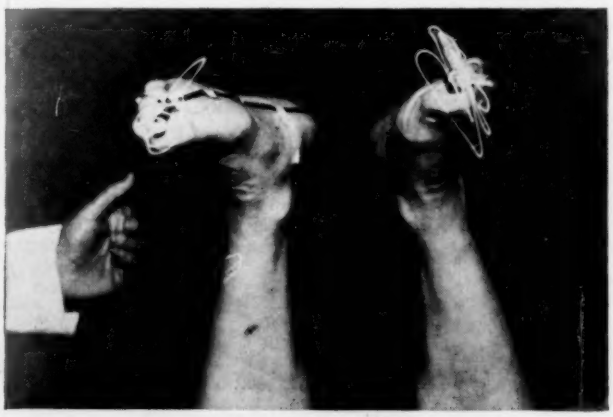

Fig. 2.—Ataxia of the lower legs demonstrated by light-tracer.

cerebellar disease, legs wide apart and arms abducted, may not be due completely to the requirement for balance but, in part, to the spontaneous tendency toward abduction, which is particularly marked in the arms. The best technique to demonstrate this is the following test. The examiner faces the patient, who is asked to allow his elbows to touch his sides with his forearms held horizontally in front of him. The index finger of both hands are held outstretched, parallel, and close together; the other fingers are bent. The examiner holds his own index fingers at the same level as the patient's, but about 10 in. (25.4 cm.) apart (fig. 5*A*). The patient is then asked to draw his hands slowly apart and bring his fingertips opposite those of the examiner. This is done first with the patient's eyes open, then with the eyes closed. With open eyes, the maneuver is performed more or less accurately (fig. 5*B*). With closed eyes, a normal person will not make any appreciable error in gauging distance. In the presence of a cerebellar lesion, however, the patient constantly moves both hands beyond those of the examiner, overshooting his mark. When the test is repeated the cerebellar patient overshoots the mark by increasing lengths (fig. 5*C*). It is essential that this test be repeated again and again. Only continual overshooting may be regarded as an expression of cerebellar dysfunction.

Abduction Tendency of the Legs.—The patient in figure 6 is a young man with marked signs of multiple

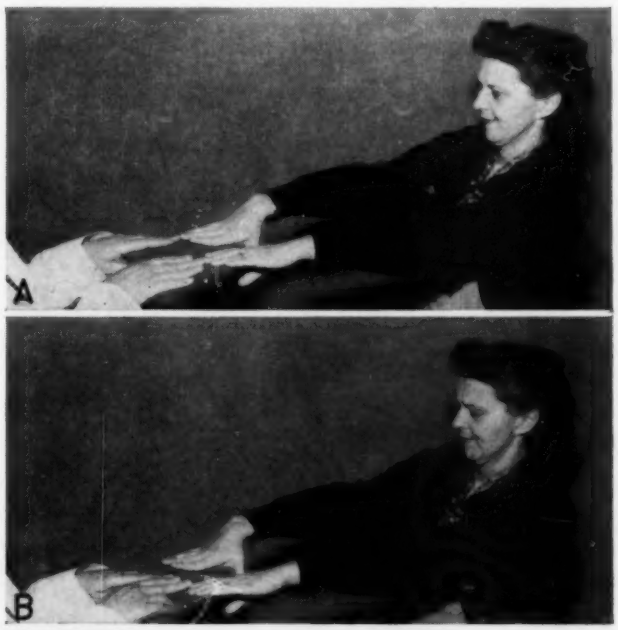

Fig. 3.—Arm deviation. *A*, position at beginning of test. *B*, position at end of test. Right arm deviates outward when the patient closes her eyes.

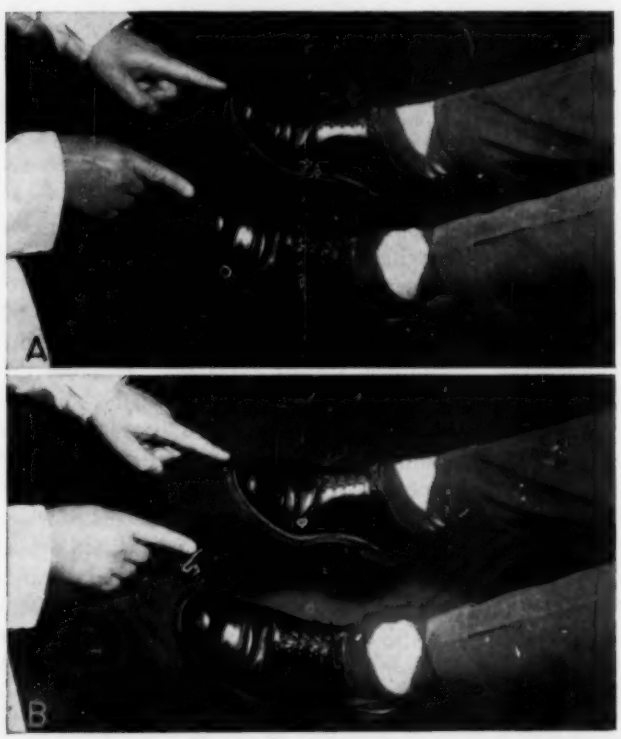

Fig. 4.—Leg deviation. *A*, position at beginning of test. *B*, position at end of test. Left leg deviates outward when the patient closes his eyes.

sclerosis, including cerebellar ataxia of the lower extremities. The lower legs of the patient, who is lying prone on the examining table, are brought to a vertical position either actively or passively. In this position they move sideways immediately. The knees remain in place.

Abduction occurs in a stereotyped manner on repeated examination. The movement is in contrast to that seen in pyramidal or lower motor neuron lesions, in which the legs extend and fall straight downward. The sidewise movement of the legs in the presence of a cerebellar lesion is in conformity with the general tendency toward abduction in patients with cerebellar disease.

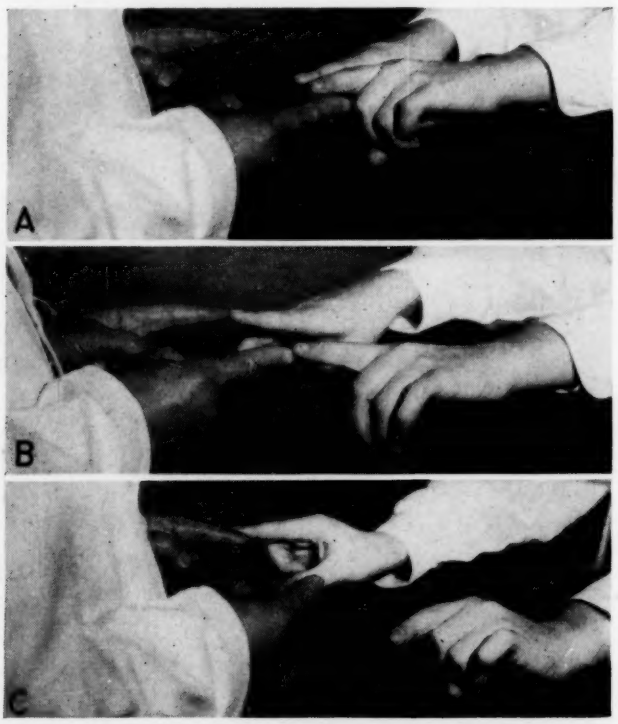

Fig. 5.—Abduction tendency of arms. *A*, position at beginning of test. *B*, with the patient's eyes open, the abduction maneuver is performed correctly. *C*, with his eyes closed, the patient overshoots his mark.

PENDULOUSNESS

Pendulousness of the Arms.—It is universally known that in paralysis agitans (Parkinson's disease), a typical extrapyramidal disease, the degree of pendular movement of the arms usually seen in walking is diminished. In slowly developing, unilateral paralysis agitans this diminution constitutes a very early and valuable differential diagnostic sign. Less well known, however, is the established clinical fact that pendulousness of the arm is also diminished in homolateral disease of the cerebellar hemisphere.[1] This diminution is understandable physiologically; pendulousness of the arms in walking is not purely mechanical but is a complicated synergetic movement, and it is diminished or lost in cerebellar diseases, in which asynergia is the most outstanding feature. In tumor of the cerebellopontine angle with homolateral cerebellar signs, this diminution of pendulousness of the arm is so often seen and is so important a sign that it must be regarded as one of the striking clinical features. Oddly enough, it is not even mentioned in Cushing's [2] classical monograph on tumors of the auditory nerve. Thus, if a patient shows a diminution of the pendular movement of one arm, this does not invariably mean that he has paralysis agitans; he may have a homolateral cerebellar disease. The distinction between a diminution of the pendulousness of the arm due to paralysis agitans and that due to homolateral cerebellar affection is easily made. The physiological mechanism involved in these two conditions is completely different.

In paralysis agitans pendulousness of the arm diminishes because of rigidity. Without rigidity there is no paralysis agitans. The usual examination of muscle tonus of the arm on passive movement easily shows this rigidity; the shoulder-shaking test is also useful. The examiner places his hands on the patient's shoulders and moves them to and fro with brisk alternate jerks. The range of arm-swinging is diminished on the side of the paralysis agitans. This diminution is also easily shown as follows. The patient, his feet separated, bends forward from the hips and allows his arms to dangle loosely without touching the trunk. The examiner applies an equal push to both arms simultaneously, and from the swinging time and range he can easily ascertain whether muscle rigidity exists and on which side. Quite different is the physiological mechanism in cerebellar disease, in which diminution of pendulousness on one side is due not to rigidity of the muscles but to dyssynergia, which is the dominant feature of cerebellar disease. When the patient walks, the arm muscles do not work synergically with other muscles of the body. There is no rigidity in cerebellar disease; on the contrary, there may be hypotonia. This lack of rigidity can easily be shown by the tests mentioned above. In the shoulder-shaking test both arms move to equal range, or this range may be even greater on the affected side. When the patient bends forward lack of rigidity can be shown by the normal, equal swinging of both arms.

Fig. 6.—Abduction tendency of legs. The patient is prone with lower legs flexed. The test shows a constant tendency toward abduction of the lower legs.

Observing the swinging of the loosely hanging arms in a patient who is bent forward is helpful in diagnosing other conditions as well as in distinguishing a cerebellar

1. Wartenberg, R.: Ein Kleinhirnsymptom, Deutsche Ztschr. f. Nervenh. **116**: 145, 1930; A Cerebellar Sign, J. A. M. A. **112**: 1454 (April 15) 1939.

2. Cushing, H.: Tumors of the Nervus Acusticus and the Syndrome of the Cerebellopontile Angle, Philadelphia, W. B. Saunders Company, 1917.

from a parkinsonian disturbance of one arm. When there is atrophy and hypotonia of the shoulder muscles, the affected arm swings longer and more widely. This is a completely objective and valuable sign.

Pendulousness of the Legs.—It is astounding how much information one can gather from the simple observation of pendulousness of the legs. The patient sits on the examining table, his legs hanging loosely; the legs are lifted passively and allowed to swing. In paralysis agitans the swinging time is diminished very early and very markedly. In pyramidal lesions and in hypertonia in general, the swinging deviates from the sagittal plane, and the movements are more circular. Any disease, wherever located, that decreases the tonus of the knee muscles increases the swinging time. Increase of swinging time caused by cerebellar hypotonia occurs in cerebellar disease; however, cerebellar hypotonia does not increase the swinging time as much as does a peripheral lesion. One should not expect too marked an increase of pendulousness in patients with cerebellar lesions. However, in cases of thrombosis of the posterior inferior cerebellar artery with cerebellar signs the increase of pendulousness on the affected side has been observed quite clearly.

TREATMENT OF SOFT TISSUE TRAUMA OF THE FACE

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In this modern, mechanical era, soft tissue injuries of the face are becoming more frequent. Physicians are daily faced with the problem of reconstructing mutilating lacerations from flying glass, avulsions from twisted steel, and abrasions filled with grease and dirt from the highway or roadbed. Such injuries demand meticulous care, for the penalty of inadequate management is visible and often grotesque deformity, with its inevitable physiological and psychological consequences. When life is threatened by the magnitude of injury the careful reconstruction of severe facial trauma can, and should, be temporarily set aside while the general physical condition is stabilized.[1] Deformity is accepted as a necessary evil, with the realization that reconstruction can be done at a later date. In most instances, however, when the facial injury is of primary concern, the final result of treatment is due entirely to the surgeon's adherence to the time-tested principles of wound management.[1a]

MECHANICAL INHIBITION OF WOUND HEALING

The care of wounds and the many facets of wound healing have always been of paramount interest to the surgeon. The role of infection in the delay of healing and the production of dense and deforming postoperative scars is well known. The widespread use of antibiotic therapy, coupled with the relative immunity of the face to its normal oral and surface flora, lessens the problem of infection in facial wounds. Much has been written about the effects of age, general physical condition, and nutritional and hormonal imbalance on the healing wound. These factors are of little importance in the immediate therapy of facial trauma unless they contraindicate surgical repair; the medical correction of the infirmities of age and the protein depletion of nutritional and hormonal imbalance belongs primarily in the postoperative period. There are, however, certain purely mechanical factors that play a most important role in the healing of the wounds and must be kept in mind constantly during surgical therapy.

Devitalized Tissue.—Every traumatic wound has a varying amount of destroyed tissue. This includes skin and subcutaneous tissue and, if the injury is severe, muscle, tendon, and bone. If not removed, this tissue acts as a foreign body to interfere mechanically with wound healing and also becomes an ideal culture medium for pathogenic bacteria.

Foreign Bodies.—The presence of any foreign body will slow the reparative process. In many injuries it is difficult to remove all the foreign bodies, but every effort should be made to remove all that are readily available. Unless this is done, the body tends to cast off this extraneous, foreign material with production of unsightly scarring.

Hematoma.—One of the commoner mechanical inhibitors of wound healing is the subcutaneous collection of serum or blood. This may, from pressure alone, cause venous thrombosis and a delay or failure of tissue union. A hematoma may also organize and degenerate into a fluid-filled, cystic mass that requires surgical removal of the cyst wall. Hemostasis should be absolute to prevent mechanical interference with the healing of a traumatic facial wound.

Dead Space.—In large avulsing wounds the loss of subcutaneous tissue acts as a deterrent to wound-healing. This open space rapidly fills with a serous exudate, which is an ideal culture medium and also prevents the raw-surface-to-raw-surface opposition so necessary for firm healing.

Tension.—Mechanical tension at the suture line is one of the commonest causes of wound separation and is second only to infection as a cause of postoperative keloid or hypertrophic scar formation. The sutures act as so many tourniquets, strangulating the surrounding soft tissue and preventing the process of repair. If a wound cannot be closed without undue tension, some form of resurfacing procedure is essential.

Trauma.—All too often the physician himself mechanically interferes with the normal processes of wound healing. The soft tissues, particularly those of the face,

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1. (*a*) Young, F.: The Care of Soft Tissue Injuries, New York State J. Med. **43**: 1521-1526, 1943. (*b*) Altemeier, W. A.: Treatment of Fresh Traumatic Wounds, J. A. M. A. **124**: 405-408 (Feb. 12) 1944.

are extremely susceptible to rough treatment. Gentleness must be the watchword of reconstruction if the postoperative result is to be acceptable. The use of small instruments and small suture material, care in hemostasis, and minimal handling of the traumatized tissue will be more than justified by the postoperative appearance.

GENERAL PRINCIPLES OF WOUND THERAPY

The surgical approach to acute traumatic lesions of the face is usually identical to that applied to soft tissue trauma elsewhere on the body. There are certain specific pitfalls and dangers, which will be discussed later, but the general principles of treatment remain the same for any soft tissue wound. A brief review of these principles is necessary before the specific variations can be noted.

Fig. 1.—Above, a 7-year-old girl who fell from a bicycle, striking the license plate of a parked car, 18 hours prior to repair. The laceration of the nose involved the nasal cartilages and nasal bones. The wounds were closed in layers with interrupted sutures of 000000 silk after total wound excision. Below, postoperative photographs taken six weeks after primary repair.

The ideal aim of surgical therapy of soft tissue trauma is to convert the accidental lesion into a clean surgical wound and then repair it. In this way the mechanical factors that inhibit or prevent wound healing can be avoided. While the creation of a surgical wound is not always possible, certain rules of therapy will closely approach the ideal if carefully and conscientiously followed.

Cleansing.—Proper cleansing of a traumatic wound is essential. Many bacteriostatic and bacteriocidal agents enjoy widespread use as "mild" antiseptics, yet any agent powerful enough to destroy living bacteria may also traumatize the raw surface of a wound. Routine use of antiseptics within the wound is to be condemned, although these same antiseptics may be valuable in the preparation of the surrounding, intact skin. All traumatic wounds should be irrigated thoroughly with isotonic sodium chloride solution to cleanse the wound mechanically. After thorough irrigation, the wound can be protected by sterile gauze and the surrounding skin cleansed with soap and the antiseptic of choice.

Débridement.—The second step in the general care of soft tissue wounds is widely advocated but rarely practiced. The entire purpose of débriding a traumatic wound is to convert it into a clean surgical wound, yet all too often either the press of time or fear of creating additional deformity leads to the mere trimming of jagged, contused skin edges and removal of bits of fat, muscle, and bone that are obviously no longer viable. Total wound excision would perhaps be a better term for the correct procedure, since the word débridement has been associated with halfway measures. In many instances total wound excision is not only possible but preferable. The conversion of an irregular laceration to a simple, straight line gives a greatly improved final result, both functionally and cosmetically. If important anatomic structures are involved, total wound excision is not always practical, but débridement should still be thorough and as complete as possible.

Closure.—The principles of closure of a traumatic wound are essentially the same regardless of the part of the body involved. Every attempt should be made to obtain a careful layer-by-layer closure. The best results are obtained by a meticulous approximation of all wound edges, using small suture material and small instruments.

Dressings.—The postoperative dressing of the traumatic wound is almost as important as the original surgical repair. A good initial result can be preserved or destroyed by the dressing care a wound receives. A dressing should not only protect the sutured wound from external contamination but also promote healing by immobilization of the entire area. Putting injured tissue at rest increases its rate of healing; this is best done by a careful and adequate postoperative dressing. Immobilization can be accomplished by either a bulky dressing, which mechanically limits motion in the entire area, or localized splinting with plaster of Paris or collodion. Adequate immobilization also adds to the patient's comfort, since excessive motion of any injured area is painful, and obviates excessive scar tissue formation. One of the commonest defects in dressing care is attributable to the surgeon's natural curiosity. It is a temptation to change dressings often just to see "how things are doing." The motion and mechanical irritation associated with frequent dressing change prolongs healing, adds to the patient's discomfort, and may increase postoperative scarring. Unless there is some specific indication such as pain, swelling, unexplained fever, or tenderness, there is no logical reason to change a comfortable dressing before removing the cutaneous sutures.

ADDITIONAL CONSIDERATIONS IN ACUTE FACIAL TRAUMA

The therapy of acute facial trauma depends not only on the strict application of the general principles of wound healing and wound management but also on the

elapsed time from injury to treatment, the type of injury, and the structures involved. Every traumatic wound of the face must be considered contaminated [2]; however, the mere fact that contamination is present does not mean that the wound is infected. A wound should not be considered infected until pathogenic organisms have invaded the normal, uninvolved tissue beyond the confines of the original area of trauma.[3] If treated properly before this invasion occurs, a contaminated wound heals as readily as one made surgically. Many authors in the past felt that wounds of the face could not be primarily reconstructed if more than six to eight hours had elapsed since injury, but the use of antibiotic therapy, coupled with the excellent blood supply and relative immunity of the soft tissues of the face, has now lengthened the period of bacteriological safety (fig. 1 and 2). Wounds may be left open as long as 24 hours, if the patient's general condition forbids earlier specific therapy, and primary surgical reconstruction then carried out, with atraumatic care of contaminated tissue helping to prevent the wide dissemination of pathogenic organisms. If reconstruction within a reasonable period of time is prevented, or if at the time of repair there is clinical evidence of localized infection, facial wounds may be allowed to heal secondarily, and the deforming scars may be revised when all evidence of infection has subsided and healing is complete. The treatment of soft tissue injuries of the face also depends on the type of injury. These may be classified into separate clinical categories, each with its own therapeutic variations.

Abrasion.—This is the commonest and simplest of all soft tissue injuries. By definition, the wound does not penetrate the entire thickness of the skin, though it may be extensive; enough epithelial elements are present in hair follicles and dermal appendages to insure primary healing if the wound is handled properly. The main danger associated with abrasions of the face is the disfiguring traumatic tattoo. Carbon particles such as gunpowder, road dirt, or grease may remain permanently imbedded in the dermis. When epithelialization is complete, this foreign material gives a bluish discoloration to the skin that remains as a permanent disfigurement unless surgically removed (fig. 2). Abrasions of the face are treated by thorough cleansing and irrigation with large amounts of sterile saline solution. If pigmented foreign material remains, it should be removed with a soft brush or carefully picked out with the point of a scalpel. The latter procedure may be time-consuming and tedious, but the results are well worth the trouble. When the wound is clean it should be covered by a simple dressing of petrolatum gauze. Epithelialization proceeds rapidly, and, unless the dressing is continuously disturbed and epithelium is destroyed, healing takes place with little or no residual scarring.

Contusions.—The contused injury, a very common type, is the result of blunt force. The surface epithelium is not broken, but instead the force is transmitted into the subcutaneous and deeper structures and ruptures the underlying blood vessels. Hematoma develops rapidly and, by pressure alone, may devitalize the overlying skin. Treatment is the prevention of hematoma formation. In the acute phase a simple compression dressing is sufficient. If the hematoma has already formed, however, it must be removed either by aspiration or by evacuation.

Lacerations.—The next commonest traumatic injury of the face is the laceration. It may be the result of a sharp instrument such as glass, but often there is an associated element of contusion or abrasion, particularly in the extensive injuries. There may be extensive devitalization of the skin, subcutaneous tissue, and muscle. Nerves may be severed and deeper structures involved with associated loss of function. The treatment of lacerations of the face is often time-consuming. All wounds should be irrigated gently with saline solution and then protected with gauze while the surrounding skin is cleansed with a mild, colorless antiseptic. Facial wounds

Fig. 2.—Above, extensive avulsing injury of the face following accidental dynamite explosion. There are extensive abrasions and traumatic tattooing of the entire face, as well as contusions of the ear and eyelids. The patient's general physical condition did not allow primary reconstruction until 22 hours after injury. Below, the patient one year after careful and complete débridement and primary closure. Total wound excision was not feasible, as it would have necessitated sacrifice of the facial nerve. Powder and dirt was removed with a soft brush and a pointed scalpel.

should be thoroughly explored for foreign bodies, and traumatized skin and devitalized deeper tissue débrided. Small straight and curved lacerations can be excised completely and converted into surgical wounds (fig. 3). Extensive wounds often cannot be excised because of the involvement of important structures, but débridement should still be as thorough as possible. When débridement

2. Bancroft, F. W.: Treatment of Traumas of Skin and Subcutaneous Tissues, Surg., Gynec. & Obst. **72**: 318-327, 1941.

3. (*a*) Barsky, A. J.: Principles and Practice of Plastic Surgery, Baltimore, Williams & Wilkins Company, 1950, pp. 98-104. (*b*) Bancroft.[2]

is complete and hemostasis established, the laceration can be closed. The postoperative scar depends on the meticulous approximation of wound edges. This is best accomplished by small sutures placed close together and tied loosely to allow for postoperative edema. Lacerations of the face, particularly those in which the two sides are of unequal length, should be closed from the periphery toward the center to avoid redundant tissue or "dog ear" at one or both ends of the wound (fig. 4).

Avulsion.—The avulsion, by definition, is any injury in which there is actual loss of tissue; it is usually the result of a tearing force exerted over a large area (fig. 2). The loss may be only superficial skin and subcutaneous tissue or may include fascia, muscle, and even bone. Partial avulsions include those injuries in which a flap of tissue is elevated, leaving one part still attached as a pedicle. The treatment of the complete avulsion depends

Fig. 3.—Above, a 52-year-old woman who slipped on a wet floor, striking her head against the corner of a table. The jagged laceration of the forehead involved the eyebrow. Below, the patient four months after repositioning of the eyebrow and primary surgical repair.

almost entirely on its size. Small avulsions in mobile areas of the face can be excised and closed primarily. If the area of loss is so great that closure results in undue tension, it is better to resurface the wound by either graft or adjacent rotation flap. The great disadvantage of free grafting in the face is the unpredictable nature of the color match. Grafts taken from areas other than the postauricular region may not match the skin of the face, and these remain as a definite patch that requires ultimate cosmetic correction. If the area is large, however, grafting may be the only possible method of closure. The treatment of a partial avulsion depends largely on the vascular supply to the distal end of the flap. Even though a pedicle of attachment remains, there may be insufficient blood supply through this pedicle to nourish the distal end of the flap. Death is due to venous congestion and thrombosis rather than arterial insufficiency. Arterial pressure forces blood into the flap, but if the venous return is inadequate congestion, stagnation, and gangrene result. Unnecessary trauma contributes to this congestion; tissue may be contused and vessels mechanically thrombosed even without the added factor of stagnation.[4] Circulatory insufficiency can often be predicted at the time of original repair, for the distal end of the flap appears cyanotic and color return is slow. If there is no question of circulatory competence, flaps may be replaced after débridement. Deep suture of these flaps is important. As healing and scar contraction occur these flaps tend to rise in the middle, and a visible hump appears. This "pin cushion" deformity can be avoided in small flaps by total excision and in larger ones by deep fixation of the central part of the flap to the underlying, supporting structures. If the circulation is in doubt, it is best to sacrifice the distal portion of the flap and repair the wound as a complete avulsion.

Puncture Wounds.—Partial, or through-and-through, puncture wounds of the face may be the result of a bullet or a sharp instrument. Trauma of this type gives a deep wound with a small wound of entrance and either no wound of exit or one that is the same size or larger than the wound of entrance. During the past war, acute penetrating wounds of the face were universally excised and left open to prevent clostridial or tetanus infection.[5] This does not necessarily hold true for all such wounds received away from the battlefield. Many puncture wounds, particularly those that do not communicate with the oral cavity, may be débrided and closed primarily, thus preventing excessive scarring. If there is any possibility that imbedded foreign material remains in the wound, it should be carefully explored and excised. The skin laceration of a through-and-through wound connecting with the oral cavity may be closed if the oral component remains open to allow for subsequent drainage. Even in the rare instance of facial infection, unsightly and deforming external scarring may be prevented by intraoral drainage.

TRAUMA TO SPECIALIZED STRUCTURES

The treatment of facial trauma depends not only on the type and magnitude of the injury but also on the structures involved. Although the treatment of any facial soft tissue injury follows the general principles of wound therapy, injury to specific structures requires specific therapy if deformity and loss of function is to be prevented.

Eyelids and Orbit.—Injury of the orbit and its contents is uncommon, owing to the protective bony configuration of the skull and face. The soft tissues are recessed, and unless trauma is severe the brunt of the force is absorbed by the supraorbital and infraorbital ridges (fig. 3); further, the natural, reflex defensive mechanism usually interposes the eyelids between the source of injury

4. Farmer, A. W.: Treatment of Avulsed Skin Flaps, Ann. Surg. **110**: 951-959, 1939.

5. Soderberg, B. N.: Surgical Repairs of Facial Injuries, Plast. & Reconstruct. Surg. **8**: 208-221, 1951.

and the eye itself. The treatment of eyelid injury is aimed primarily at the prevention of scar ectropion and exposure of the eyeball. Débridement should be kept at a minimum, and vertical lacerations should be closed by interdigitation to prevent a single vertical scar whose contraction will produce ectropion.[6] Conjunctival tears can be repaired with the finest sutures to prevent painful irritation of the eye. If the conjunctiva is avulsed, it should be replaced with mucous membrane from the mouth to prevent adhesions between the eyeball and lids. Every possible precaution should be taken to preserve the length and function of the eyelids. Trauma to the cornea can be diagnosed with fluorescin and a slit lamp. The cornea heals rapidly if protected, and an occlusive dressing and repeated pupillary dilatation to prevent adhesions between the iris and the cornea are usually sufficient. In penetrating wounds of the eye, both eyes should be carefully bandaged to prevent sympathetic ophthalmia.

Ears.—The auricle, because of its exposed position, is often injured. The thin, cartilaginous support is easily contused, and post-traumatic chondritis often leads to bizarre deformities that are extremely difficult to correct. Persistent hematoma or edema causes the so-called cauliflower deformity, and infection will cause necrosis of the cartilage, loss of support, and a traumatic microtia. The injured ear should be débrided carefully to remove any cartilage whose viability is questionable, and a meticulous layer-by-layer soft tissue closure should then be carried out. Sutures through the cartilage are unnecessary, as the anterior skin is so adherent that careful fixation in this region will stabilize the injured cartilage (fig. 4). Postoperatively, a careful dressing of moist cotton is applied to the normal convolutions of the ear and held firmly in place by an encircling bandage. This should be changed and the ear inspected daily, so that any hematoma can be aspirated and pressure reapplied. Immediate treatment of the acute traumatic wound of the ear may prevent or cause postoperative deformity.[7]

Stensen's Duct.—Lacerations of the central face near the anterior border of the masseter muscle may tear or actually divide Stensen's duct. If this condition remains undiagnosed, a persistent and deforming salivary fistula results. If a severed duct is suspected and there is no evidence of salivary drainage, the continuity of the duct can readily be determined by insertion of a flexible probe through the punctum opposite the upper second molar tooth or by sialography. When the duct is divided it should be repaired if possible. The proximal and distal ends can be anastomosed over a number 16 gauge polyethylene tube that is passed from the mouth beyond the line of anastomosis to support the suture line and allow saliva to drain into the mouth. This strut is usually sutured in place until healing is complete, when it may be removed. If there is actual destruction of the duct or an insufficient amount of the proximal portion remains for effective anastomosis, the duct should be ligated and postoperative x-ray therapy given to the parotid area to destroy its function. Once established, salivary fistulas may be very difficult to control.

Facial Nerve.—A laceration of the facial nerve trunk or its branches leads to a well-known deformity. The diagnosis can be missed unless careful examination is carried out in every instance. Once local or general anesthesia has blocked the injured area, diagnosis is virtually impossible, so the usual test of whistling, smiling, closing the eyes, and wrinkling the forehead should be routine. If the nerve has been divided, careful anastomosis of the severed ends gives the best possibility of restoration of facial function. The facial nerve will regenerate like any peripheral nerve if the normal anatomic pathways are provided. This repair may require a diligent and time-consuming search for the severed branches; a nerve stimulator, if available, will be an invaluable aid. If the nerves can be identified, the severed ends should be approximated with interrupted sutures in the perineural sheath. When the nerve is destroyed, the wound should be treated like any other facial laceration and the deformity secondary to facial palsy corrected surgically after healing is complete.

SUMMARY

The surgical management of soft tissue injuries of the face demands meticulous attention to detail if deformity is to be prevented. The time-tested principles of wound management and wound healing in soft tissue trauma apply to facial trauma; specific details of management depend largely on the type and size of wound and the involvement of certain specialized structures of the face that require specific diagnostic and therapeutic care.

Fig. 4.—*A*, extensive avulsion lacerations of face, forehead, eyelids, and ear in an 18-year-old boy after an automobile accident. The general physical condition precluded surgical repair until 18 hours after injury. *B*, 72 hours after primary débridement and closure of all lacerations with interrupted silk sutures. *C*, three weeks after primary surgical repair. The wounds are all well healed. There is no deformity of the auricle or ectropion of the eyelids.

6. Young.[1a] Barsky.[2a] Soderberg.[5]

7. Soderberg, B. N.: Facial Wounds in Korean Casualties, U. S. Armed Forces M. J. **2**: 171-182, 1951. Straith, C. L.: Automobile Injuries, J. A. M. A. **109**: 940-945 (Sept. 18) 1937. Woolsey, J H.: Débridement, Am. J. Surg. **82**: 170-182, 1951.

Tobacco Bronchitis.—Inhaled smoking is the cause of smoker's bronchitis. It is rare in cigar and pipe smokers. On the other hand, 96 to 98% of cigarette smokers inhale. Tobacco bronchitis is therefore almost entirely confined to cigarette smokers. The frequency of bronchitis is 9% in children and nonsmoking adolescents, and 7.4 to 19.3% in nonsmoking adults. The incidence rises progressively with the quantity and duration of smoking to an average of 76 to 80% in smokers of both sexes who consume 20 or more cigarettes. Smoking is four to seven times more common as a cause of bronchitis than all other causes combined. Tobacco bronchitis is therefore the most frequent factor in the etiology and pathogenesis of complications that follow bronchitis of any origin, viz., laryngospasm, bronchospasm and bronchorrhea during anesthesia, bronchitis, atelectasis and pneumonia after operation. Cessation of smoking cures "smoker's bronchitis."—B. A. Greene, M.D., and S. Berkowitz, M.D., Tobacco Bronchitis: An Anesthesiologic Study, *Annals of Internal Medicine*, April, 1954.

THE DILEMMA'S HORNS

BASIC SCIENCE AND THE CLINICIAN

CHAIRMAN'S ADDRESS

Irvine H. Page, M.D., Cleveland

The dilemma, so called from the resemblance of its presenting bony parts to an archaic and discarded Greek letter, is a widely distributed, undomesticated, and sometimes ferocious creature. One reads and hears frequently of persons who have been caught on the horns of one. The species I would discuss is the common dilemma of medicine. It has a ferocity all its own. On one of its horns rests, uneasily, basic science and on the other, confidently, clinical medicine; the dilemma relates the two.

THE PROBLEM

I suppose most younger clinicians are only vaguely aware that bedside medicine and basic science have for years wondered what each had to do with the other. Most of the older ones think basic science at least a doubtful part of medicine and act as though it were a menace, with no other purpose than to obfuscate the practical management of patients. Basic scientists in turn consider clinicians woolly minded but amiable souls who want to do research in absentia. Somehow, also, the teaching of basic science and the practice of research have become so intertwined that many trustees of medical schools view both as an unnecessary burden on the already burdened budget of the schools. Nobel prizes in the most basic of basic sciences are being won in hospital laboratories, and yet nobody has decided either how to support these investigators or, for that matter, even what to call them. The specialty board examiners add to the din by requiring students to answer some pretty searching questions concerned with basic science, many of which most practicing physicians of an older vintage could scarcely answer. The surgeons want basic science tailored to what they believe their needs—a basic science that seems to be something quite different from the ophthalmologists' or the internists' variety. All of these groups have concrete ideas about what is best for their specialty. Since physicians rest uneasily on the horns of the common dilemma, the nature of the beast must be more closely examined.

The problem seems to have been forced on physicians by (1) the phenomenal growth of science, on which the practice of medicine is based; (2) the growing complexity of clinical medicine itself; (3) the great growth of interest in, and recognition of the importance of, research; (4) the positive chemotactic action on scientists of the large amounts of money currently available for medical research.

Passing from one good and convivial dinner to another, one likes to think one can shake off the whole problem of the relationship of basic science and clinical medicine and go back to training physicians with no further nonsense; good practical physicians who give the right pills and get patients well. Along with the gray dawn of morning comes the realization that the basic science problem just "hasn't shook." I should first make it clear that when I refer to basic science I do not necessarily mean the "laboratory" in its usual sense. Too often the test tube has come to symbolize a laboratory test with its clinical interpolation rather than the broad connotation of the principles of basic science. This is not a discussion of the "laboratory" versus the "bedside."

STRUCTURAL PRINCIPLES

All physicians had to study organic chemistry once. Hundreds of thousands of compounds have been synthesized since early in 1813, and yet, as a group, the organic chemists show no signs of being unduly bewildered by this haphazard constellation of complex organic structures. This is due to the fact that certain structural principles were adopted and adhered to relatively early, and, indeed, documented in that most remarkable set of books known as "Beilstein," which provide the guidelines from the "basic" knowledge to the "practical" production of compounds. The transition was smooth because only seldom did the notion of a division of their discipline into "basic" and "operational" occur to anyone. In contrast, medicine grew up plagued with departmentalization, which has erected barriers to the free flow of knowledge, and, worse, it has developed no organizing principles comparable with those of the organic chemist's with which to find one's way among the clutter of facts. Like a juggler, a physician is forced to keep as many facts as possible whirling around in his head and not drop too many during his act. Unfortunately, as the reflexes get older, the juggler finds it increasingly difficult to keep the facts he already has, much less add more to the swarm. My professor of organic chemistry at Cornell, Dr. Orndorff, once told me it was not how much organic chemistry I knew that counted but how much I knew about where to find what I wanted to know.

But medicine needn't continue its wastrel ways. Into medical teaching can be introduced organizing principles that will take care of many current difficulties. Medical knowledge can be systematized so that, starting with basic components and organizing them, a structure results that can be analyzed in terms of the same components and principles. The phenomenal growth of organic chemistry was made possible by early recognition of the high importance of the basic units—carbon, hydrogen, oxygen, and nitrogen. Dissimilar compounds became analyzable in terms of these basic units. By recognizing the organizing forces of valency, molecular size, shape, and position, resonance and such, the broad pattern of interrelationship of organic compounds was discernible.

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Read before the Section on Experimental Medicine and Therapeutics at the 103rd Annual Meeting of the American Medical Association, San Francisco, June 23, 1954.

AN EXAMPLE

The basic components of medical knowledge are water, electrolytes, oxygen, lipids, proteins, and carbohydrates. With organizing principles, working through certain mechanisms, the animal body can be compounded of these, and, in these terms, it can also be analyzed. Let me take an example from the routine of medical practice. A patient is suffering from extensive arteriosclerosis for which methods neither of diagnosis nor treatment are known. How does the clinician start thinking about the disease at all, to decide what to do and what not to do? As I would have it, the principle basic elements concerned are lipids and proteins derived from food (nutrition) and from endogenous synthesis (biochemistry-enzymology). The lipids become organized into lipoproteins (physical chemistry) and are transported across blood vessel walls where they may meet with obstruction because of the structure of the vessel (histology-anatomy); transport is also influenced by the kind of filter bed (heredity-anatomy) and lateral arterial pressure (physiology). Intramural capillary hemorrhage (pathology) and turbulence in the blood column at sites of vessel branching or anatomic abnormality, such as patent ductus arteriosus (biophysics), may predispose to lipid deposition. Fibroblastic and ground substance reactions finally determine the fate of the vessel (embryology-chemistry). Age, sex, diet, and heredity (clinical aspects) constitute the factors conditioning the substrate on which all these operate to produce atherosclerosis.

Here, in simple form, is the essence of the problem of arteriosclerosis. Both the basic components and organizing lines are clear, though greatly in need of being extended. New knowledge may be added without loss of simplicity. It tells the clinician why dietary control limited to cholesterol alone would be unsuccessful. It tells him why plasma lipoproteins are the center of so much discussion. It tells him why hypertension will increase the severity of arteriosclerosis; but most important, it provides a logical approach to the solution of a problem, a problem of the sort clinicians face every hour of the day. Knowledge has been drawn from both the clinical and basic sciences, but distinctions between them have not been made. In short, the solution of a problem, insofar as current knowledge allows, has been achieved by reorientation of a hodgepodge of knowledge derived from widely different disciplines.

FUNCTIONAL NEEDS

If the solution of problems is the primary function of a physician then it would aid him in his training if the problems the body has faced and solved were taught to him. The body has functional needs, and these must be satisfied. For example, the need for water is evident, and it must be kept in just the right amount. Given that need, how does the body go about organizing the solution of the problem? To mention but a few of the parts of mechanism set up to control the water content of the body: (1) thirst, (2) salt metabolism, (3) osmoreceptors in the midbrain, (4) pulmonary loss, (5) intra and extracellular space and their control, (6) the kidneys, and (7) the blood pressure developed by the heart. All of the varied parts of the mechanism are concerned with the homeostasis of water. Viewed as a whole, having developed as a part of emergence from the sea, the body has solved the problem of water conservation in an entirely logical and understandable fashion. Without understanding of the basic mechanisms and why they are so contrived, the student's mind is left with little on which to build. Deviations from this orderly mechanism are caused by disease, and often the same signs appear as a result of deviations superficially quite different in nature; edema may be of renal, cardiac, or merely dietary origin, but is all part of the mechanism regulating water.

Knowledge organized in such a way as to trace from the original chemical units of protoplasm the way in which nature has solved the problems of the functional needs of the body provides an intellectually economical schema that is just as usable at the bedside as in the classroom of the basic sciences. By being taught to think the same way in both branches of medicine, clinical and basic, the void between the two can be bridged; the "common dilemma" has in these terms provided the means of relating the one with the other. Perhaps it is well, at times, to be caught on the horns of a dilemma in order to be shown the essential oneness of problems that at the onset seem to be multiple and widely disparate.

Synthetic and Analytic Channels and Their Association with Health and Illness

	Organizing Principles	+	Basic Components	(Mechanisms) →	Products
The Well Man					
Synthesis:					
Cells	Growth Reproduction Steady state Adaptation		Water Electrolytes Gases Protein Carbohydrate Lipid	Surface phenomena Osmosis Oxidation Enzymes Energy release	Protoplasm Microsomes Mitochondria Virus Genes Bacteria Protozoa
Body	Orientation Growth Reproduction Homeostasis Adaptation			Gas exchange Energy control Hormones Accessory substances Immune reactions Nervous and humoral integrative action	Mammal Invertebrate Vertebrate
Man	Biologic Philosophical Socioeconomic Cultural Religious		Mammalian organization	Integration of somatic and psychic function	The healthy man
The Sick Man					

Analysis:

1. Illness is disorganization at any level in the synthetic channel.
2. Diagnosis is made by analysis of the disordered functions to locate the level and channel of the disorder.
3. Therapy is rational reestablishment of the disordered channel.

SYNTHESIS AND ANALYSIS

Perhaps this plan for organization of thinking may be further clarified by making it more specific. This I have done in a table that shows the channels of synthesis that finally are expressed as the well man. In reverse, analysis is associated with the sick man; illness is disorganization at any level in the synthetic channel. The principles of organization, utilizing the basic components, through the mechanisms, yield the final products. These synthetic channels operate at three levels: the cell, the body, and the man. Before modern methods of isotope analysis were introduced, the constant turnover and rebuilding of

the body was not known. It seemed a static affair; once built it remained the same, and the need for the synthetic channels would largely have disappeared. With introduction of the dynamic concept, the need is, on the contrary, constant. When, for example, chemical reactions involving about 16 lb. (7.3 kg.) of sodium chloride a day occur in the body, channeling obviously must occur. Under such circumstances it takes little disorganization of these channels to produce illness.

If this logical structure is accepted, the teaching of medicine becomes grounded on learning the nature of the basic components—carbohydrate, lipid, protein, gases, electrolyte and water—how they are organized through different stages of complexity into the human body, how nature has solved the problems of the body's functional needs, and finally how they are deviated from the normal by disease. At the bedside, clinical medicine becomes the solution of problems in these same terms. The anathema of further intellectual departmentalization, the miserable current failure of integration of basic science and clinical medicine, and the growing and altogether overwhelming complexity of the factual aspects of medicine may so be dissipated. While I plead for the union of basic science and medicine, by the provision of this logical inner structure to uphold and allow the union to grow, those treasures of human thought and emotion that keep medicine a profession rather than a technology, should be embraced. The physician must continue to be that rare combination of scientific skepticism and human compassion to be worthy of this trust.

2020 E. 93rd St. (6).

EVOLUTION, REVOLUTION, AND BOARD CERTIFICATION—1932 TO 1954

CHAIRMAN'S ADDRESS

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Evolution plays an important role in medicine as in all other phases of life; however, changes in the medical field during the past 30 years have been so profound and so far reaching as to be revolutionary in scope. In many directions this has made available methods for detection of minimal evidence of disease, the ramifications of disease processes have been more clearly defined, and many patients have been salvaged from the category of incurable. The development of new methods of diagnosis, better means for prevention of disease, and of more rational, and often specific, therapeutic procedures poses a challenge to the medical profession. Translation of these modern and continuing advances in knowledge to practical application has not always followed closely, since this is dependent mainly on the availability of physicians with long-term, graduate education leading to the development of special skills and of mature judgment. There is, moreover, often a variation in the quality of medical care depending on the density or sparseness of population, on economic factors, and particularly on the educational status of a community. This problem of providing for more even distribution of superior medical care is a major one in medicine today. With these thoughts in mind it is of importance to trace the growth of specialization and the influence exerted by the specialty boards.

PUBLIC ATTITUDE TOWARD SPECIALIZATION

The general public today is much more enlightened in regard to progress in medicine than their counterpart of three decades ago. This is largely because of informative material in newspapers, magazines, radio, and television. Some of the material is prepared and disseminated by the medical profession and by medical agencies, but much is the work of lay workers, some of whom devote their professional careers to this field. Cancer, heart disease, and diabetes have been widely discussed. This has resulted in a trend toward self-diagnosis and a desire to share in the decision regarding therapy. The logic of certain diagnostic or therapeutic measures may be perfectly apparent to the physician, but he may meet resistance from a patient unless the measures conform to the information the patient obtains from his favorite columnist. Most patients do not look for miracles from a physician, but they do expect honesty, frankness, and a modicum of skill. Furthermore, they expect fewer mistakes in diagnosis and faster results from therapy if they consult someone who is devoting his entire energies to a particular field. Thirty years ago the desire for specialist care was less apparent than now and was satisfied by comparatively few specialists. While specialists at that time were consulted directly by patients, they were also utilized as consultants by general practitioners to assist in the diagnosis of obscure diseases and in the treatment of patients with unusual or recalcitrant disorders. This approach was helpful only to a small percentage of the general public and, while of help in cases of great complexity, could in no sense be considered a definitive and permanent solution. There has been a gradual realization that in medicine, as in other human endeavors, increasing knowledge must lead to particularization of effort. No lawyer or engineer today could hope to master all the ramifications of his field. The same holds true for a physician.

RESPONSE OF PHYSICIANS

While at first specialist care in medicine was considered useful only in cases of severe, disabling, or life threatening illness and injury, it has become apparent that other less vital, but frequently troublesome, disorders also yield more readily to the expert approach. Physicians, aware of their deficiencies, have increasingly sought and obtained the necessary instruction so that they might become proficient in a limited field of medicine. It is of interest to note the gradual evolutionary tendency to numerical and percentage increase of specialists in the United States

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during the years 1923 to 1943 (table 1). The pattern was one of gradual expansion, with approximately 1,250 new specialists each year. In sharp contrast, during the seven years between 1944 and 1950, inclusive, over 25,000 specialists were approved as competent by the various boards. This meant that about 3,500 physicians were admitted each year to specialist category, or at approximately three times the former rate. The reasons for this extraordinary condition are various. It is true that the general public has demanded better medical care, not only as individuals, but also through interest in hospital centers. Even in a small community there is increasingly critical appraisal of the credentials of physicians. Physicians who served in the Armed Forces during the second world war were encouraged to seek additional training, either by refresher courses or in long-term training programs, by the government policy of monetary support (G. I. Bill of Rights). They had observed that the armed forces stressed specialist care of patients and could visualize the advantages, not only in pay, but also in the more rapid cure and over-all satisfaction from more knowledgeable handling of the injured and the ill. The overwhelming demand for graduate training might be considered revolutionary, since it was a mass movement

TABLE 1.—*Approximate Number of New Specialists of All Categories per Year from 1923 to 1954*

Period	No. of Yr.	No. of New Specialists	No. per Yr.
1923-1931	8	10,400	1,300
1931-1943	12	15,000	1,250
1943-1950	7	25,000	3,560
1950-1954	4	5,000	1,250
Total or average 1923-1954	31	55,400	1,800

in the sense that Webster defines revolution as a "total or radical change." Since 1950 there has been a return to a gradual increase in specialists at the level of approximately 1,250 per year, although the time interval is too short to establish that this is a definite trend. At this time there are approximately 155,000 physicians in active practice in the United States, this being about three-fourths of all registered physicians. Over 65,000 physicians are practicing a specialty, and most of these are certified as competent by one of the specialty boards. In addition there are 20,000 physicians who are "interested in a specialty." Approximately 70,000 physicians are in general practice.

DISTRIBUTION OF CERTIFIED SPECIALISTS IN DERMATOLOGY

It was not too long ago that specialists were to be found in only the larger cities. This is no longer true, and there are few, if any, cities in which specialists of all categories are not to be found. There are 43 cities in the United States in which five or more certified dermatologists are practicing (table 2). Only 31 cities were in this category in 1947. These 43 cities have a total population of 33,747,868 (1950 census) and support 812 certified dermatologists or 1 dermatologist to 41,561 persons. The remaining 116,949,493 persons in the United States have access, sometimes remote, to 526 certified dermatologists or 1 dermatologist to 222,337 persons. This obviously represents inadequate coverage if the same standards of dermatological care are to prevail in all sections of the country. In a paper read before the Section on Dermatology and Syphilology in 1948 [1] analysis was made of the distribution of dermatologists in the United States. It is of interest to compare the statistics at that time with those of five years later, and to note a substantial increase in all sections of the country. The increase from 852 dermatologists in 1948 to 1,338 in 1953 is 57%. The total number of specialists who had been certified in dermatology by Dec. 31, 1953 was 1,573. The difference between this and 1,338 represents

TABLE 2.—*Distribution of Dermatologists in Cities with Over Five Certified Specialists (1953)*

City	No. of Certified Specialists	Population (1950)	Per Capita Distribution
New York	237	7,835,099	1:33,059
Chicago	56	3,606,435	1:64,400
Philadelphia	43	2,064,794	1:48,018
Los Angeles	42	1,986,607	1:47,300
Boston	28	790,863	1:28,245
Washington, D. C.	28	797,670	1:28,488
Detroit	22	1,838,517	1:83,568
Cleveland	22	905,636	1:41,165
San Francisco	22	760,753	1:34,579
St. Louis	17	852,623	1:50,154
Pittsburgh	16	673,763	1:42,110
Cincinnati	15	500,510	1:33,367
Newark, N. J.	15	437,857	1:29,190
Houston, Texas	14	594,321	1:42,451
Baltimore	14	940,205	1:67,157
New Orleans	14	567,257	1:40,518
Denver	12	412,856	1:34,404
Buffalo	11	577,398	1:52,490
San Diego, Calif.	11	321,485	1:29,220
Milwaukee	10	632,651	1:63,265
Dallas, Texas	10	432,927	1:43,292
Seattle	10	462,440	1:46,244
Minneapolis	10	517,277	1:51,727
Oklahoma City	10	242,450	1:24,245
Oakland, Calif.	10	380,576	1:38,057
Miami, Fla.	8	246,983	1:30,872
Indianapolis	8	424,683	1:53,085
Paterson, N. J.	8	139,423	1:17,427
Omaha	7	247,408	1:35,344
Portland, Ore.	7	371,011	1:53,001
Atlanta, Ga.	7	327,090	1:46,727
Phoenix, Ariz.	7	105,442	1:15,063
San Antonio, Texas	7	406,811	1:58,115
Kansas City, Mo.	6	453,290	1:75,548
St. Paul	6	309,474	1:51,579
Albany, N. Y.	6	134,995	1:22,499
Long Beach, Calif.	6	244,072	1:40,678
Syracuse, N. Y.	5	220,067	1:44,013
Birmingham, Ala.	5	298,720	1:59,744
New Haven, Conn.	5	163,344	1:32,668
Wichita, Kan.	5	166,306	1:33,261
Elizabeth, N. J.	5	112,675	1:22,585
Dayton, Ohio	5	243,108	1:48,621
Total	812	33,747,868	1:41,561

diplomates who were not reported in private practice in the United States in the 1953 edition of the "Directory of Medical Specialists." Whereas in 1948 there were eight states with no dermatologist, today only one state, Wyoming, is without such representation. When the individual states were surveyed, it was noted that in 1948, only two states and the District of Columbia had a per capita distribution of more than 1:100,000. In table 3 it will be noted that eight states and the District of Columbia now enjoy this advantage. On the other side of the ledger, there are 18 states in which the per capita

1. Senear, F. E.; Lewis, G. M., and Cormia, F. E.: Present Status of Dermatologic Training in the United States, Arch. Dermat. & Syph. 60: 475 (Oct.) 1949.

distribution is less than 1:200,000, and it is in these states that the problem of providing adequate dermatological care is obviously the most pressing.

From a consideration of data it would appear that a dermatologist will survive economically if he receives support from other physicians in a community of from 30,000 to 40,000 population and in many instances in even smaller centers. The patient with a recalcitrant or disabling dermatosis may travel a considerable distance for help, and patients tend to gravitate to a large center of population. These are factors that have not been considered, since they do not lend themselves to accurate analysis. It is of interest that on many hospital staffs and in large group clinics there is need for at least one dermatologist to each 40 physicians. This same ratio holds true when the number of certified dermatologists is divided into the total number of specialists certified by all the boards.

TABLE 3.—*Distribution of Dermatologists by State and Geographic Divisions (1953)*

Section and State	No. of Certified Specialists	State Population (1950)	Per Capita Distribution
New England			
Maine	1	913,774	1:913,774
New Hampshire	3	533,242	1:177,747
Vermont	2	377,747	1:188,873
Massachusetts	51	4,690,514	1: 91,968
Connecticut	27	2,007,280	1: 74,346
Rhode Island	6	791,896	1:131,982
Total	90	9,314,453	1:103,493
Middle Atlantic			
New York	319	14,830,192	1: 46,489
Pennsylvania	97	10,498,012	1:108,226
New Jersey	65	4,835,329	1: 74,389
Total	481	30,163,533	1: 62,710
South Atlantic			
Delaware	3	318,085	1:106,028
Maryland	15	2,343,001	1:156,200
District of Columbia	28	802,178	1: 28,649
West Virginia	5	2,005,552	1:401,110
Virginia	15	3,318,680	1:221,245
North Carolina	15	4,061,929	1:270,795
South Carolina	6	2,117,027	1:352,837
Georgia	12	3,444,578	1:287,048
Florida	21	2,771,305	1:131,966
Total	120	21,182,335	1:176,519
East North Central			
Wisconsin	17	3,434,575	1:202,033
Michigan	37	6,371,766	1:172,209
Illinois	82	8,712,176	1:106,246
Indiana	19	3,934,224	1:207,064
Ohio	65	7,946,627	1:122,255
Total	220	30,399,368	1:138,178
East South Central			
Kentucky	6	2,944,806	1:490,801
Tennessee	13	3,291,718	1:253,209
Mississippi	3	2,178,914	1:726,304
Alabama	9	3,061,743	1:340,193
Total	31	11,477,181	1:370,231
West North Central			
Minnesota	22	2,982,483	1:135,567
Iowa	10	2,621,073	1:262,107
Missouri	31	3,954,653	1:127,569
North Dakota	2	619,636	1:309,818
South Dakota	2	652,740	1:326,370
Nebraska	8	1,325,510	1:165,688
Kansas	14	1,905,299	1:136,092
Total	89	14,061,394	1:157,993
West South Central			
Oklahoma	13	2,233,351	1:171,796
Arkansas	4	1,909,511	1:477,627
Texas	60	7,711,194	1:128,519
Louisiana	15	2,683,516	1:178,901
Total	92	14,537,572	1:158,017
Mountain			
Montana	1	591,024	1:591,024
Idaho	1	588,637	1:588,637
Wyoming	..	290,529	.....
Nevada	3	160,083	1: 53,361
Utah	5	688,862	1:137,772
Colorado	15	1,325,089	1: 88,339
Arizona	9	749,587	1: 83,287
New Mexico	4	681,187	1:170,296
Total	38	5,074,998	1:133,552
Pacific			
Washington	18	2,378,963	1:132,164
Oregon	9	1,521,341	1:169,037
California	150	10,586,223	1: 70,574
Total	177	14,486,527	1: 81,844
Total for United States	1,338	150,697,361	1:112,629

ROLE OF THE SPECIALTY BOARDS

It might be appropriate to discuss briefly the specialty boards. How did they come into being? What was their purpose? What have they accomplished? Prior to formation of the certifying boards in the various specialties, there was no recognized standard to ensure the public that claims to special knowledge by a physician were legitimate. The licensing requirements by the states demanded only the minimal knowledge that graduates of first-class medical schools usually had no difficulty in demonstrating; however, there was no provision to test the particular knowledge and judgment of persons who were purportedly medical specialists. With the increasing numbers of physicians specializing in the various medical fields, the desirability for some regulatory scheme became self-evident. Since there was no mechanism available through existing organizations, it is to the credit of specialists within the medical profession that they established voluntary examining bodies in their own fields. It should be emphasized that this whole movement was and is independent and self-motivated, being established and perpetuated within the medical profession itself, and it has not been controlled by the state, by universities, or by any preexisting lay or medical organization.

Development.—The first specialty certifying board was the American Board of Ophthalmology, which was created in 1916. The next two boards were the American Board of Otolaryngology and the American Board of Obstetrics and Gynecology, established in 1924 and 1930, respectively. The fourth board was the American Board of Dermatology and Syphilology, founded in 1932. These four boards, together with the Association of American Medical Colleges, the American Hospital Association, the Federation of State Medical Boards of the U. S. A., and the National Board of Medical Examiners joined together to form the Advisory Board for Medical Specialties on Feb. 11, 1934. Since then, 14 other specialty boards have been organized and have been admitted to membership in the advisory board. In addition, there are nine sub-specialty boards. The advisory board, as its name implies, is a loosely knit body, with no power to make decisions binding on its individual members. It holds an annual meeting at which timely topics currently of interest to specialists are discussed. It also has the authority to admit to membership new specialty boards if such are deemed necessary. The Council on Medical Education and Hospitals of the American Medical Association has cooperated wholeheartedly with both the advisory board and individual boards, to their great benefit.

The various boards began as independent units and have so remained. It will help to understand the functioning of a board if it is kept in mind that it is comparable to a judicial organization. The board is composed of members designated from sponsoring societies. Once elected, the members are responsible only to their own consciences. This independence is highly desirable and

obviates the possibility that a board might become a political football. It should be stated that, since the members of a board have the confidence of sponsoring societies and since no individual member has more than executive power, no fear need be felt that board decisions will be biased or discriminatory. The boards have found it advisable to insist on certain basic and minimal training requirements that candidates for the examination must satisfy. Since conditions of practice in the different specialties often present problems peculiar to that group, it is not surprising that individual boards exercise considerable variations in their activities. Moore[2] recently reviewed some of the discrepancies in requirements and in the functioning of the boards. These variations in individual boards are minor, are usually based on sound reasoning, and represent the judgment of thoughtful men.

Professional Standards.—The boards were established to determine competence of candidates. In exercising their right to establish the "ground rules" under which they could operate, they have also become a potent force in raising professional standards. For instance, at times the minimal standards established by a board were higher than existed in an institution undertaking to provide graduate training. This resulted either in withholding approval of the institution or in deficiencies being remedied. At times, also, this led to criticism of the boards as interfering with the function of an educational body. This would be true if the boards made ironclad rules with conformity to a pattern as requisite to approval. The American Board of Dermatology and Syphilology, like most, if not all other boards, allows great latitude in the performance of an institution, while requiring that graduate students in that institution be given the opportunity to learn all phases of the specialty. One can see how misunderstandings and nonconformity to regulations can result in friction. The very nature of an examining body indicates that not all candidates will be found qualified. Not all those rejected accept the decision of the board as equitable. Chiefs of hospitals that have been refused approval as adequate for graduate training seldom believe the decision is motivated by clear thinking. And heaven help the board with the temerity to remove from the approved list an institution that had previously qualified! In spite of these and many other difficulties, the vision of those responsible for the formation and conduct of the boards has been amply demonstrated.

The boards have been criticized as responsible for the fostering of monopolistic practices. One of the most frequent sources of dissatisfaction concerns the selection of staff members for a hospital when the institution requires board certification for appointment. This has resulted occasionally in unfair treatment of physicians eminently qualified but who, for one reason or another, have never been certified. No one can deny that a lay board of governors of a hospital might be rightfully impressed by certification as indicating high qualification, and it is true that the onus of proof might well be on a noncertified applicant for a hospital position to demonstrate his competence. However, once competence has been proved, either through long service or otherwise, discrimination against him as noncertified cannot be justified. The board certificate should never be used as a weapon. For details of the everyday functioning of a board, the reader is urged to read the article by Braceland and Boyd.[3] Written in a humorous vein, it portrays vividly the active life and the vicissitudes of the secretary and therein the problems, great and small, that confront, and sometimes confound, the members of these organizations. Recent publications by Watson[4] and by Schnabel[5] also are informative.

RESPONSIBILITY FOR GRADUATE MEDICAL EDUCATION

Recent exhaustive surveys both in the field of premedical[6] and of medical[7] education indicate a wide divergence in colleges in both content and method. There would appear to be a definite trend toward a "balanced education" and a strong feeling that the physician should have a broad and liberal education with less emphasis on science in the premedical years and with cultural subjects receiving more attention. There is considerable agitation to shorten the total period of education for the physician. No unanimity of opinion appears possible as to just when this retraction in time should occur, except that everyone concerned believes it should happen in some period other than the one in which he is personally interested. Adding to the difficulty is the growing realization that, for a physician to be strongly equipped to take his place in the medical community, long-term graduate training is almost essential. Hospitals and medical colleges offering graduate instruction were unprepared for the heavy demand for specialty training immediately after World War II. This urgent request for instruction became a challenge to institutions that had not heretofore had experience in the field of graduate medicine. This was at a time when the staffs of the undergraduate medical colleges were just recovering from the wartime accelerated program. There was some hostility to the insistence by the boards that appropriate basic science subjects must be taught. Some misunderstandings arose over the implementation of these requirements. The boards were occasionally accused of assuming an unreasonable or dictatorial attitude.[8] In general, however, this and other actions of the boards helped materially to elevate standards and to protect graduate students from being exploited.

Residencies and Fellowships.—At this time graduate training programs are centered chiefly around the residency and fellowship, with only a minority of students receiving instruction in so-called postgraduate medical schools. Preceptorship instruction is still considered acceptable as an additional method of learning dermatology and some other specialties. In many instances the residency and fellowship program is under the direction of a medical college, although this is by no means requisite to approval by the Council on Medical Education and

2. Moore, R. A.: Variations on a Theme, J. A. M. A. **154**: 1216 (April 3) 1954.

3. Braceland, F. J., and Boyd, D. A.: Secretary of the Board: Apologia Pro Vita Sua, J. A. M. A. **148**: 708 (March 1) 1952.

4. Watson, C. J.: Some Activities and Impacts of the American Board of Internal Medicine, J. A. M. A. **138**: 257 (Sept. 25) 1948.

5. Schnabel, T. G.: The American Board of Internal Medicine, J. A. M. A. **152**: 1590 (Aug. 22) 1953.

6. Severinghaus, A. E.; Carman, H. J., and Cadbury, W. E.: Preparation for Medical Education in the Liberal Arts College, New York, McGraw-Hill Book Company, Inc., 1953.

7. Deitrick, J. E., and Berson, R. C.: Medical Schools in the United States at Mid-Century, New York, McGraw-Hill Book Company, Inc., 1953.

8. Chesney, A. M.: Some Impacts of the Specialty Board Movement on Medical Education, J. A. M. Coll. **23**: 83 (March) 1948.

Hospitals of the A. M. A. or by many of the boards. It is also true that some hospitals with no medical college affiliations are, nevertheless, able to carry out a satisfactory program, and that their graduates are able to compete favorable with those trained in hospitals closely affiliated with a medical college. Basically, the reasons for existence of a hospital and of a medical college are different. The primary obligations of the former are to the patient, for whom the hospital provides shelter and facilities for care and tries to attract an adequate medical staff. The continuing education of the younger members of the staff is rightfully a secondary consideration. On the other hand, the main function of a medical college should be to select and train medical recruits to be good physicians. Medical colleges try to provide opportunities and sufficient challenging experiences so that their graduates are basically competent physicians. This is becoming more and more difficult. In those fortunate centers where a medical college is coupled with a hospital, the professional staffs are identical, and the preclinical departments of the medical college have the vision, funds, and inclination to cooperate fully, a superior graduate program is probably in operation. There are too few such loci now available.

If the trend toward specialization continues, as there is every reason to expect it will, the medical colleges cannot evade their responsibility to their own graduates to provide a program and to supervise and instruct in the specialties. It is debatable whether the more general use of the graduate degree, which should indicate ability in teaching or research, will be found desirable. There are, no doubt, many valid reasons, financial and otherwise, for failure of many medical colleges to assume the responsibility to graduate education. With the present reduced demand for graduate training it would seem appropriate for the medical colleges to show a more active interest in this vital problem. In the future they should assume the lead in the specialty movement.

ECONOMICS OF SPECIALIZATION

The specialty movement has developed rapidly and spontaneously. It has been erroneously blamed as responsible for some problems, particularly the rising cost of medical care. In most communities the fees charged by specialists, with the exception of those in the surgical fields, are not substantially more than those of general practitioners, although they are necessarily higher than formerly. This fact is not, however, the main cause of hardship. Illness costs more than formerly, chiefly because diagnostic measures are more complicated and, therefore, more expensive, and because the cost of hospitalization has increased enormously. Many modern drugs are expensive. The charge that specialists are responsible for the economic woes of the general public, because patients have to be referred from one kind of specialist to another, has some small basis in fact. This should be offset to some degree by the expected lessening in morbidity through more expert care. It should be emphasized that the physician's fee is actually only a fraction of the total cost of medical care. The rapid growth of group practice is a significant trend, being an answer to the demand for specialist care in smaller communities. The provocative, impatient idealism of Means [9] raises many questions relating to defects in present day medicine. The role of government looms large in his attempts to point the way to improvement. The majority of physicians apparently feel otherwise.[10] The main economic medical hazard is still the unpredictable catastrophic illness or injury that requires prolonged care and is further complicated by loss of income. This, of course, is not peculiar to specialization. It is an ever-recurring and fortunately rare problem the solution of which offers considerable difficulty. It has been partially solved by prepaid insurance for both medical care and hospitalization. Specialists, as physicians, have in the past cooperated and will always cooperate in such situations with their services donated or at reduced fees when indicated by hardship or distress. The ability to provide adequate specialist care in sparsely populated communities is a difficult problem, but it should not be insurmountable. It is here that planning on a county, state, or national level may be required, if the problem cannot be solved under the auspices of existing organizations.

RESPONSIBILITIES OF SPECIALISTS

It is to the credit of physicians that they have been willing to undergo the additional training required by the boards in order to qualify for special recognition. This has seldom been an easy assignment. Small wonder, then, that the frequent reaction of a new diplomate is to throw his books into the corner and say that he is through with study forever. He knows, of course, that he has only started on a program that will continue during his professional life. He must either continue to study and become increasingly proficient or he will regress. His duty to himself, to the profession, and to his patients is to come periodically in contact with others in the specialty and to keep abreast of new developments. In addition, there is a debt to the physician's teachers to be repaid. This should take two forms: (1) there should be a personal, professional contribution, by research, by teaching, and by helping to organize or to staff dermatology departments; and (2) there should be support of the activities of his specialty board, the American Academy of Dermatology and Syphilology, the A. M. A., and other organizations, local, regional, and national in scope. Active participation means regular attendance at meetings, appropriate discussion in the scientific deliberations, and the voicing of suggestions or criticisms when such seem desirable or necessary. Communications are best directed to the secretary of the organization in question. Rumors that are palpably false regarding the activities of a medical organization should be brought to the attention of its officers, so that further harm may be stopped.

SPECIALIST MEDICINE IN THE FUTURE

With the gradual reduction in the number of general practitioners there are some communities in which it is difficult to find a "family doctor." It is, therefore, important for each physician, whether specialist or not, to qualify as family doctor. Such a physician must have the confidence of a family that consults him when illness de-

9. Means, J. H.: Doctors, People, and Government, Boston, Little, Brown & Company, 1953.

10. Doctors, People, and Government, Book Review, J. A. M. A. **154**: 183 (Jan. 9) 1954.

velops. It is more than likely that some physicians will continue to wish to be general practitioners, caring for common disorders and acting as family physicians. From all indications, however, the percentage of such physicians will continue to decline gradually.

The time would seem appropriate to banish the idea that specialists are primarily consultants. Formerly, the specialist was often thought to be a standoffish, cold-fish scientist. Unfortunately, there are still some specialists with a detached and perfunctory attitude of superiority and a lack of appreciation of the finer sensibilities of the patient. For the most part, however, the specialist of today is a realistic, sympathetic practitioner and does his most effective work when he looks after the patient, rather than when he tries to supervise the problem with another physician. At times, consultation between physicians is valuable, but usually this is when the diagnosis is in doubt, when there is some question of medicolegal complications, when long-continued therapy has been ineffectual, or when a decision may determine the life of a patient. The United States is now the most fortunate nation in the world, medically as well as in many other ways; however, there is still room for improvement. It is a matter of record that there are many places in the United States where specialist care of patients is the rule. Most of the practicing physicians on the staffs of institutions in the larger cities, and in many medium-sized and smaller cities in the United States, confine their practice to a limited field. The success of group practice in many sections of the country is further evidence that care of patients at the specialist level can be accomplished in sparsely settled communities.

So far the demand for specialist care has been mostly from larger centers of population. There is evidence, however, that increasingly the rural population and persons in small towns will insist that they too should be treated by specialists. A patient who recently came 150 miles to New York said he did this because he noted that that was what the physicians in his community did when they required medical attention. This is a period of transition and the change will no doubt require many years. Indications at this time point to eventual universal specialization. As mentioned previously, it would appear from analysis of available statistics that one out of 40 practitioners should be a dermatologist. Since there is no agreement as to how many physicians of all categories are required to provide medical care for the United States, it is obviously impossible to do more than guess at the future dermatological requirements. Nevertheless, it is evident that the saturation point has not nearly been reached. In fact, the number of dermatologists at this time could be probably doubled, provided there was a proportional increase of other specialists. The outlook in the next 30 years could well be 4,000 to 5,000 dermatologists, or even more as the population increases.

The present agitation for the socialization of medicine is mostly due to economic considerations, but the desire of the public to receive not only adequate but superior medical care may be an additional factor. Many persons mistakenly believe that in some magic way the cost will be less and the quality of medical care will improve if the government is in control. It is evident that the present administration is not anxious to venture into the regulatory field, and future administrations will not have the incentive if the public generally receives the superior medical care that is available now for a minority. The chief problem is to provide specialist care in sparsely settled districts. The great and continuing advances in medicine must become universally and promptly available, which will require a sufficient number of specialists.

SUMMARY

From 1943 to 1950 about 25,000 physicians became certified as specialists. The result has been a profound change in medical practice, since from one-third to one-half of all physicians now in active practice are specialists. To judge from a survey of certified dermatologists, the distribution of specialists is still uneven. The highest rate per capita is found in the large centers of population, but increasingly, even in smaller cities and large towns, specialist care may be obtained. It is in the rural communities and in sparsely settled areas that specialists are in short supply. The continued increase in group practice and the large number of rural communities in which a hospital center has been established makes it evident that specialist care will be in time available to all sections of the United States. It is apparent that this major change in medical practice has occurred concurrently with sociologic and economic problems of utmost difficulty to solve. Lack of specialists may be an important factor with the rising cost of medical care as a basis for talk of socialization. It is probable that if specialist medical care was more evenly distributed there would be no appreciable demand for state medicine. The specialty boards as examining agencies have served an invaluable role in setting up standards of proficiency for specialists. Specialists must continue to study in order to keep abreast of current progress and should support the activities of organized medicine. Efforts should be made to shorten the total period of education of the physician. This is increasingly important since the majority of physicians now believe graduate training to be essential in order to prepare for the demands of private practice. The question is raised whether the medical colleges should not more closely integrate and supervise graduate education that should in the near future be considered of equal importance with the basic undergraduate medical course.

66 E. 66th St. (21).

Ozone Toxicity.—Ozone is found in the stratosphere, where it is formed by the action of ultra-violet light on oxygen, the amount varying with the latitude and season of the year. The atmospheric circulation tends to bring some of this ozone toward the surface to add to that produced by atmospheric electrical discharges. Ozone concentrations near the earth's surface are normally very small, being of the order of from zero to a few hundredths parts per million. (Higher values reported in the past have now been shown to be due to faulty analytic methods.) The presence of even these small amounts of ozone, however, causes relatively rapid cracking in stretched natural rubber—a test that is used for ozone detection. Recently it has been shown by Haagen-Smit and his group that ozone undoubtedly plays a dominant part in contributing to eye irritation, crop damage, haze, and odor of Los Angeles smogs.—H. E. Stokinger, Ph.D., Ozone Toxicity, *A. M. A. Archives of Industrial Hygiene and Occupational Medicine,* May, 1954.

ORGANIZATION OF A PATHOLOGICAL ANATOMY LABORATORY SERVICE

SYSTEM FOR RECORDS, STANDARDIZATION, AND RESIDENT TRAINING

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The object of this paper is to present procedures for the organization of a pathological anatomy service based on the methodology of the Standard Nomenclature of Diseases and Operations.[1] These procedures have been used for the past two years. It is felt that they represent a step in the direction of achieving uniformity and standardization and will facilitate research and statistical analyses of records within a given department and between several laboratories; they also facilitate the orientation and training of residents in pathology. Angrist,[2] in 1946, had initially recommended the use of the nomenclature and its coding scheme for use in the pathology laboratory. At present it is being used, in part, in many laboratories. It is hoped that this paper will serve to popularize the use of the nomenclature as initially described for coding and filing and to make additional suggestions for its over-all usage in pathology.[3]

In the past 10 years great strides have been made in achieving uniformity in hospital clinical records and files. This has been possible due to the sponsorship by the American Medical Association of the Standard Nomenclature of Diseases and Operations as the reference for diagnostic terms, coding, and filing.[4] To date, 4,937, or 74%, of the registered hospitals in the United States use the nomenclature clinically, and hospitals in numerous others countries have also adopted it.[5] Dr. A. Bradford Hill [6] emphasized the need for a uniformity of nomenclatures and procedures in medicine to collect and record material, which could then be more ably used for progressive statistical evaluation. The need for an ideal nomenclature may still exist,[7] but for the present the Standard Nomenclature of Diseases and Operations represents an encouraging compromise. The diagnostic terms are now cross coded with the International Statistical Classification of Diseases, Injuries, and Causes of Death, which extends the usefulness of the nomenclature to international statistical problems as studied by the World Health Organization.[8] The Standard Nomenclature of Diseases and Operations has been translated into Spanish and Portuguese and is being extensively used in Latin America, Canada, and Palestine, and therefore "the possibility of international uniformity in medical nomenclature is foreshadowed."[4] In this light, it is of interest that in Great Britain, the "Nomenclature of Disease" has been revised with the adoption of the basic organization of the American nomenclature with only moderate modifications of the etiological classification.[9]

In surveying the records of numerous pathological anatomy laboratories, one is struck with the contrasted comparison to the uniformity of hospital clinical records. Diagnostic terms, coding, and records used in the pathology laboratories differ from laboratory to laboratory and from laboratory to clinical record files in the same hospital. It appears somewhat ironical that pathology, the science of medicine, should lag behind clinical medicine, the art of medicine, in the achievement of organization, uniformity, and standardization, which are qualities more related to science than to art. In addition, terminology tends to differ from pathologist to clinician. Therefore, the adoption of a standard system by the pathology laboratory as well as the clinical services may well be a step forward in the achievement of the dependent interests of clinical and laboratory medicine.

It is notable that prominent pathologists have participated in the preparation of the nomenclature. In addition, the new 1952 edition has incorporated the preferred nomenclature concerning hematology as recommended by the Committee for Clarification of the Nomenclature of Cells and Diseases of the Blood and Blood-Forming Organs. This edition also includes the new classification of tumors, which has the sponsorship of the American Society of Clinical Pathologists, the Armed Forces Institute of Pathology, and others. This is in accord with the aim of the nomenclature to keep abreast of the progress in medicine by periodic revision and is a measure of the needed cooperative spirit of pathology in such progress. These revisions can be to the advantage of the laboratory, since it will enable the large pathology laboratory using the nomenclature periodically to rejuvenate and store (with the appropriate edition of the nomenclature), what would otherwise have become cumbersome and space-occupying files.

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Drs. Sebastian Caniglia, William Glassman, Albert Levy, and Irving M. Reingold assisted in the preparation of this paper. Miss Terese Nielsen and Mrs. Ann Shell gave secretarial assistance in the preparation of the manuscript.

1. American Medical Association: Standard Nomenclature of Diseases and Operations, edited by R. J. Plunkett and A. C. Hayden, New York, Blakiston Company, 1952.

2. Angrist, A.: Classification and Cross Indexing of Pathological Material by Means of Chart Adaption of the Standard Nomenclature of Disease, J. Tech. Methods **25**:106-122, 1945.

3. Schoen, I., and Reilly, E. B.: Coding of Pathologic Diagnoses, Letter to the Editor, Am. J. Clin. Path. **24**: 713, 1954.

4. Jordan, E. P.: Standard Nomenclature and Medical Record Library, Mod. Hosp. **68**: 54-55, 1947. Huffman, E. K.: Application of Standard Nomenclature in Small Hospital, Bull. Am. Coll. Surgeons **32**: 164-166, 1947.

5. Hayden, A. C.: Classification of Diseases, Correspondence, Brit. M. J. **1**: 672, 1953. Arestad, F. H., and McGovern, M. A.: Hospital Service in the United States, J. A. M. A. **152**: 143-163 (May 9) 1953.

6. Hill, A. B.: Personal communication to the authors.

7. Reimann, S. P.: Green Pastures in Pathology, Am. J. Clin. Path. **18**: 349-353, 1948.

8. World Health Organization: Manual of International Statistical Classification of Diseases, Injuries, and Causes of Death, rev. 6 of the International Lists of Diseases and Causes of Death, Adopted 1948, bull., supp. 1, Geneva, Switzerland, World Health Organization, 1949.

9. The Nomenclature of Disease, Joint Committee appointed by Royal College of Physicians of London, ed. 7, London, England, His Majesty's Stationery Office, 1948.

The use of the standard nomenclature is equally applicable to small and large laboratories and forms a basis for personal filing of reprints, lectures, and papers; the preparation of small teaching sets of normal and pathological tissue slides; and for the filing of gross and microscopic photographic slides. The usefulness of the standard nomenclature system is also attested to by the adoption of its outline, in part, for cataloging by medical libraries and museums.[10]

In the past few years some suggestions have been made for the organization of pathological material on a departmental service basis or for personal slide collections.[11] These offer personalized programs but do not achieve the over-all benefits of standardization plus organization as does the system based on the nomenclature. Thinking in terms of anatomic and etiological diagnosis and pathogenesis is the basis of study methods of gross and microscopic pathology. This, too, is the basis of nomenclature and coding in the Standard Nomenclature of Diseases and Operations, by virtue of its topographic and etiological classifications and subdivisions of structural manifestations.

METHOD

An understanding of the general scheme of the nomenclature and its use in the coding of surgical and autopsy diagnoses can be achieved readily by reading the few pages of the introduction in the nomenclature. The article of Angrist,[2] which more especially applies to the pathology laboratory, will also be helpful in filing and coding suggestions. Many diagnostic terms appear in the index of the Standard Nomenclature of Diseases and Operations. If a diagnostic term does not appear in the index, coding is easily performed by using the preliminary sections detailing the topographic and etiological terms. To select the appropriate code number for any diagnostic term not in the index, it is easy to identify the topographic and etiological component independently from the preliminary sections detailing the topographic and etiological terms. This, too, may even be faciliated by using the chart outline in the article by Angrist.[2] An example of this coding or cataloging for the purpose of filing is as follows: Myocardial hypertrophy, unknown cause, may be coded 430 from the topographic classification (page 23), and 9x6 from the etiological classification section (page 80), as unknown cause with structural reaction manifesting hypertrophy. The chart from Angrist could also be used. If a useful diagnostic term does not appear in the index or if an appropriate code number cannot be found it is suggested that the pathologist communicate with the editors of the nomenclature. One should not devise code numbers that do not appear in the nomenclature, as this is the province of the editors and the purpose of the nomenclature. How far one goes in the details of numerical coding will depend on the amount of material in the particular laboratory or for the particular service. For small personal filing or teaching sets of slides, subject headings instead of code numbers might be used in the same order by system.

To facilitate the general use of the nomenclature, mnemonics for the order of systems and etiological classifications provide convenient memory schemes. The order of terms in the topographic classification based on the first letter of the main word in each system can be remembered easily as Bĭm RCH Dūĕnō. The order of terms in the etiological classification can be less easily remembered as Pĭp Dĭm Dĭnū, as indicated in the table. These mnemonics facilitate the autopsy demonstration and the writing or dictation of the protocol. They serve also as an easy reminder of the where, what, and how of pathology.

The practicability of using the nomenclature in achieving uniformity will not interfere with the individuality so cherished by the well-trained pathologist. No matter what term one may choose (for example, nephrosclerosis or arteriolosclerosis), the coding and filing in anatomic and etiological terms will be similar in most all instances. The controversies concerning the use of the proper etiological terms will stimulate discussion and often raise the question of "why," which should initiate and promote progress in study and research. In the section of the nomenclature corresponding to supplementary terms there are useful categories often applicable to general pathology and topics of special or personal project interests can be filed with this section.

Schema of Classification After the "Standard Nomenclature of Diseases and Operations"

Topographic Classification (Main Divisions)		Etiological Classification	
Mnemonic Aid: Bĭm RCH Dūĕnō		Mnemonic Aid: Pĭp Dĭm Dĭnū	
Body as a whole	000	000	Prenatal influence, diseases due to
Integumentary system	100	100	Infections, diseases or infections due to a lower plant or animal parasite
Musculoskeletal system	200	200	Infestations, diseases or infections due to a higher plant or animal parasite
Respiratory system	300	300	Intoxications, diseases due to
Cardiovascular system	400	400	Physical agents, diseases due to trauma or physical agents
Hemic and lymphatic system	500	500	Disturbances in circulation, innervation or of psychic control, diseases secondary to
Digestive system	600	600	Mechanical abnormality, diseases due to or consisting of static mechanical abnormality
Urogenital system	700	700	Disorder of metabolism, growth or nutrition, disease due to
Endocrine system	800	800	New growths (neoplasms)
Nervous system	900	900	Unknown etiology-diseases due to unknown or uncertain cause with structural reaction manifest; or
Organs of special sense	x	x	With the functional reaction alone manifest
		y	Undetermined cause

The over-all task of finding code numbers when one is familiar with the system of the nomenclature, assisted by the mnemonics described (and the outlined chart from Angrist) is not inconvenient, especially in view of the academic yield stimulated by the etiological classification. The routine task is lessened by the presence of a

10. Army Medical Library Classification, Medicine and Related Subjects, preliminary edition, Washington, D. C., U. S. Government Printing Office, 1948.

11. Gordon, H.: Method for Cross Indexing Pathologic Diagnoses, Am. J. Clin. Path. **17**: 913-914, 1947. Woll, E.: Simplified Index of Pathologic Diagnoses, ibid. **22**: 364-367, 1952. Lennox, B.: A Short Classification for the Small Histopathologic Collection, Lab. Invest. **2**: 164-174, 1953.

trained pathology secretary who will have no difficulty in finding the appropriate code numbers for the more numerous and common diagnoses and who, we find, even enjoys the intellectual content associated with the use of the Standard Nomenclature of Diseases and Operations.

For the routine performances in the usual pathology laboratory, cross indexing and filing by patient's name, number (autopsy or surgical), and diagnostic code numbers or terminology facilitates the availability and usefulness of accumulated materials, as has been the experience of many laboratories. In the preparation of the autopsy protocol the topographic outline (Bĭm RCH Dūēnō) is used for both gross and microscopic descriptions. This facilitates correlation between gross and microscopic findings and vice versa and the reviewing of autopsy protocols for specific findings.

The use of the routine autopsy procedure, autopsy demonstration procedure, and protocol outline based on the nomenclature has habituated the pathology resident to an efficient, thorough, and thoughtful study of pathology. The arrangement of files, materials, and records makes the departmental material more accessible for teaching and research.

SUMMARY AND CONCLUSIONS

In this laboratory, the Standard Nomenclature of Diseases and Operations, applied as described above, has been enthusiastically and gratefully received by staff pathologists, residents, and secretaries. The incorporation of the system of Standard Nomenclature of Diseases and Operations into the organization of the pathological anatomy service has proved the basis of a well-integrated department.

In over 10 years' use, the nomenclature has proved itself an extremely valuable tool in cataloging clinical records. Its merit is attested to by its use in 74% of the nation's hospitals. The system is invaluable for the coding of pathological as well as of clinical diagnoses. It provides a common denominator for clinician and pathologist in the hospital laboratory. It provides a means of comparing records from various hospitals and laboratories. It is plastic enough to be used in laboratories of various sizes. In teaching programs it assists in orienting and training the pathology resident. It is a means of achieving some uniformity and standardization of terminology and methodology in medicine and lessens the schism between laboratory and clinical medicine.

MEDICAL EXPERIENCES IN COMMUNIST POW CAMPS IN KOREA

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The following report constitutes a general recital of the experiences and observations of five American medical officers who were prisoners of war of the Communists in Korea. No attempt has been made to present this material as a scientific study. The period of observation started in July, 1950, and continued until September, 1953, when the last group of prisoners of war was repatriated. A large part of the accumulated prisoner of war experience is included. Some of the smaller groups composed largely of men who were captured after Jan. 1, 1952, were not observed directly by any of the captured medical officers.

THREE PHASES OF CAPTIVITY

The entire period of captivity is divided into three general time phases. The first phase started with capture and ended with arrival in the first permanent camp. It was characterized by lack of food and shelter, forced marches, and exposure to the elements. Men were forced to march through snow storms without adequate clothing or foot covering. Food was supplied and prepared by the local inhabitants. Frequently there was no food for 24 to 72 hour periods. The only water available for drinking was snow or water from polluted sources, such as standing wells, creeks, and rice paddies. With few exceptions, the prisoners got to rear areas by marching and carrying the wounded, either on improvised litters or on their backs. Injuries resulting from prolonged marches and exposure to cold were common. Dysentery made its first appearance. Medical supplies were nonexistent, and treatment was limited entirely to first aid, using improvised splints and rag dressings. Most of the prisoners experienced severe mental depression.

The second phase began with the arrival at the first permanent camp and ended about October, 1951, when the first beneficial effects of the armistice negotiations were felt. This was a phase of profound deprivation of all the necessities of life. The diet was grossly inadequate. The Thanksgiving, 1950, meal of one group of 500 men furnishes a typical example. Each man received a millet ball weighing less than 200 gm., and the whole group was given soup prepared by boiling nine heads of cabbage in water. Group sanitation and personal hygiene were at their lowest levels. The men were housed in small, unheated, overcrowded, vermin-infested Korean farm houses. No clothing was issued until July, 1951. Medicine and medical care were inadequate, and morale reached its lowest ebb. In the face of all these conditions, sickness and death became the order of the day.

The third phase began in October, 1951, with gradually increasing quantities of food, clothing, and medicine. This period was characterized by many fluctuations in the attitude of the captors toward the prisoners, which

Read before the Section on Military Medicine at the 103rd Annual Meeting of the American Medical Association, San Francisco, June 24, 1954.

appeared to follow changes in the political situation and the armistice conference. The diet remained inadequate in protein and vitamin content. Housing was gradually improved to a point of relative comfort, and clothing was sufficient for survival. Sanitary conditions, while never good, underwent a gradual improvement. Medical care never became adequate. Avitaminoses were prevalent.

MEDICAL CARE

The health of all United Nations' prisoners was neglected throughout the period of captivity. Before the onset of armistice negotiations the Communists showed no uniform desire to keep the prisoners alive. By the spring of 1951 the food shortage had become so acute that weeds growing adjacent to the prison compound were boiled and eaten. Most of the serious disease epidemics occurred during the first year of captivity. Pneumonia and dysentery were epidemic at this time. Some of the captured medical officers were allowed to see patients. Medical and surgical supplies, however, were doled out on a day-to-day basis. The so-called hospital compounds were frequently the coldest buildings in the camp. The patients slept and lived on the floors of these filthy, crowded compounds. It was common for them to awaken in the morning and find that the man sleeping on either side had died during the night. No provision was made for the prisoners to be properly clothed, and their diet was always poor. At times they were put on a special diet consisting of an unseasoned preparation of soupy rice.

Penicillin and the sulfonamides were available sporadically and in such small quantities that it was not possible to treat all who needed these drugs. On one occasion we were given 2 million units of aqueous penicillin for the treatment of approximately 100 cases of pneumonia. Our captors refused to allow more than 6 gm. of sulfonamide for the treatment of any single pneumonia patient. Frequently, the only medicaments available were cough tablets for pneumonia and charcoal tablets for dysentery. Surgical problems were handled in an equally haphazard manner. It was necessary to wait several weeks to obtain a few surgical instruments and the barest minimum of anesthetic materials. Incision and drainage of abscesses was usually carried out without anesthesia, by using improvised instruments, such as a knife made from the arch of a combat boot.

Deaths.—Virtually all of the deaths in the Communist prisoner of war camps were caused directly or indirectly by starvation, exposure, and the harassment by the enemy. The lack of medicaments was not the most important factor. During the first month or two of captivity most of the deaths occurred among the wounded. During the succeeding three to five months most of the men died either from pneumonia or dysentery, or from a combination of these two. After the first five or six months of captivity the majority of deaths occurred among persons suffering from pellagra or beriberi. During one five-month period there were between 5 and 28 deaths per day in one camp in North Korea. None of these men had illnesses that would have caused death had they been under normal conditions.

After October, 1951, the prisoners were put on a subsistence diet and were given sufficient clothing and reasonably warm housing. All of the men continued to suffer from periodic loss of day and night vision, and bleeding from soreness of the mouth and lips. There were occasional cases of pneumonia and dysentery. Sickness and death became so common during the first year and a half of captivity that the prisoners began to feel that any sickness would be fatal. In an attempt to overcome this attitude, the captured physicians coined a very unfortunate term, "give-up-itis." The use of this term had its desired immediate effect on the prisoners. It made them realize that the individual's fighting spirit had to be maintained at a high level for him to survive any illness. The term, "give-up-itis," has recently gotten wide circulation in the public press. The erroneous impression has been created that prisoners of war who were in good physical health gave up and died; this is not true. Every prisoner of war in Korea who died had suffered from malnutrition, exposure to cold, and continued harassment by the Communists. Contributing causes to the majority of deaths were prolonged cases of respiratory infection and diarrhea. Under such conditions, it is amazing, not that there was a high death rate, but that there was a reasonably good rate of survival.

Chinese Physicians.—During the summer and fall of 1951, all of the British and American doctors were gradually replaced by Chinese. Most of the Chinese doctors exhibited a wide range of medical incompetence. Most of them had a maximum of six months' formal schooling, and we saw only one physician who appeared to be well trained. The Chinese doctor who was put in the most responsible position was one who was best oriented politically. The average Chinese doctor who conducted sick call in the prisoner of war camps elicited only the chief complaint and prescribed medicine for symptomatic relief. It was a general rule that only one symptom would be treated at a time; therefore, if a patient suffered from night blindness and diarrhea, it was necessary for him to decide which of these complaints was bothering him more before he went on sick call. He would not be treated for both conditions.

The Communists introduced us to several unusual types of medical treatment. One Chinese doctor used a series of short needles attached to spring vibrators for the treatment of pain. The needles were placed in the skin around the painful area and then were made to vibrate. As one might suspect, some cases of back pain and headache were cured by this treatment. At one time a Chinese doctor decided that all of our visual disturbances were caused by glaucoma. He injected hypertonic sodium chloride solution subconjunctivally. Another notable treatment was used for avitaminosis. Bile was obtained from the gallbladders of pigs when they were butchered, and it was then dispensed to all who complained of vitamin deficiency diseases. This treatment had its desired effect in keeping patients away from sick call. In the summer of 1951 a great Russian panacea was used in treating 56 seriously ill patients. This consisted of the subcutaneous transplant of small pieces of chicken liver that had been incubated in a weak solution of penicillin. These patients were immediately put on an attractive, high calory, high protein, high vitamin diet. In all cases, the chicken liver either sloughed through the

operative site or became a hard, tender nodule. None of these men died, and we were thus allowed to witness another miracle of soviet medical science.

INDOCTRINATION

The most important single consideration that placed the prisoners of war in North Korea apart from any other group of American prisoners of war was Communist indoctrination. This indoctrination had a profound effect on the general health of the group. The medical profession and the American people as a whole have a great deal to learn from a study of the techniques, purposes, and effectiveness of Communist indoctrination as it was used on Americans in North Korea. There is no reason to believe that the Communist indoctrination techniques that were used on the prisoners of war were different in any way from the general pattern of indoctrination that is being used in Communist-dominated countries today. It is important to realize that every aspect of the daily life of the prisoner, from the moment of capture to the time of release, was part of the general plan of indoctrination. At the time of capture, each prisoner was given the general theme of indoctrination: "We are your friends. Your conditions of living are bad now, but we will work together to improve them. We will correct the errors in your thinking. Once you have learned the truth, we will send you back to your families."

Steps in Indocrination.—The first necessary step was to break down the normal resistance to an alien ideology. This was accomplished by keeping the prisoners cold, hungry, and in a state of disorganized confusion until each person realized that resistance meant starvation and death. It was emphasized repeatedly that the prisoners were no longer members of the armed forces of their nation, and all attempts to maintain a military organization were harshly punished. The planners of this indoctrination program did not condone the shooting of large numbers of prisoners. Instead, they resorted to starvation and exposure to cold. After a few months of this treatment the resistance of the survivors had softened. The second phase of indoctrination consisted of an intensive formal study program. For a period of approximately one year, most of the waking hours of the prisoners were spent in some form of supervised study. Food was gradually improved and more clothing was issued. It was made painfully clear to each prisoner that living conditions would be improved only so long as there was no resistance to the study program. The formal study program consisted of an endless repetition of two main themes; first, that the United States government is imperialistic, run by and for the wealthy few, and, second, that Communism reflects the aims and desires of all the people and is the only true democracy. The main propaganda technique that was used was ceaseless repetition of the main theme.

During the third phase all formal studies were stopped. The groundwork had been laid, and, to a large extent, the purposes of the indoctrination program had been fulfilled. Books, pamphlets, and newspapers became available in quantity. During this time, the Chinese conducted many individual and small group interviews. They attempted to find points of individual susceptibility on such grounds as race, religion, or economic status. The most intensive subject for special indoctrination was the bacteriological warfare hoax. Throughout the period of captivity there were many instances of individual brutality. Solitary confinement, beatings, withholding food and water, and exposure to cold were common punishments. Resistance leaders were taken away from the main body of prisoners and kept either in solitary confinement or in small groups of recalcitrants. No one escaped the indoctrination program. When a captured medical officer stated that he had no interest in politics, he was told, "Up to this time your education has been incomplete. You have only learned how to cure. We Communists will teach you whom to cure."

Purposes.—The indoctrination program had a twofold purpose; first, the selection and conversion of susceptible persons, and, second, group neutralization. During the first year of captivity there was a continual regrouping of prisoners in an attempt to isolate resistance groups. They were separated according to rank and later according to national and racial groups. There were a few persons who eventually accepted the Communist ideology, but they constituted only a small minority of any single group. The second purpose of indocrination, group neutralization, was far more important and somewhat more successful. The Communists fostered discontent and distrust within the groups. So long as there was no unity of purpose, there could be no effective resistance.

COMMENT

The experiences of this group, therefore, form a valuable basis for the understanding of Comm.unist aims and techniques. Most persons in the United States are probably guilty of a certain smugness about the possibility of Communism actually taking over our country. It is worth while to keep in mind two well-known facts: first, no country has ever been taken over by Communists because the majority of the people in that country wanted it; second, no country once it has been taken over by Communism has ever reverted to another form of government. Communist tyranny has been maintained by the application of indoctrination techniques similar in every respect to those that were practiced on the prisoners of war in North Korea. A relatively small group of Communists with a definite plan would have little difficulty in wresting power from a government that is paralyzed by a coalition of small groups concentrating on their own short-sighted self-interests.

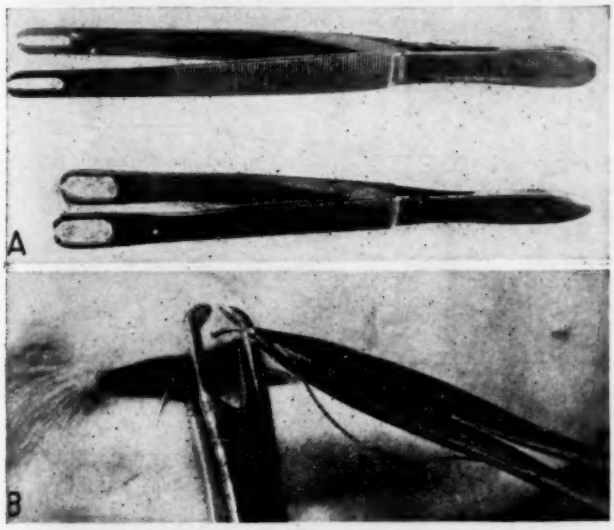
The people of the United States must realize that the spread of Communism anywhere in the world, whether by armed aggression or by internal infiltration, constitutes a direct threat to our survival as a nation. Americans must work against Communism by being vigilant; they must work for democracy by constantly striving toward the democratic ideal of an enlightened people participating in their government. Physicians have an influence that is out of proportion to their numbers. That influence should be used to fight Communism by intelligently promoting democracy.

CLINICAL NOTES

NEW SUTURE FORCEPS

Daniel Levinson, M.D., Seattle

Suturing of skin lacerations is among the most frequent minor surgical operations in the general practice. The usual method of suturing, in which the skin edge is held with a straight forceps while the needle is passed, is mechanically unsound because the skin is supported at one point only. Resistance to the needle creates a stretching and tearing shear force between the needle and the forceps, requiring additional effort and resulting in trauma to tissue, pain, and occasional bending or breakage of the finer curved needles. A new suture forceps is here described, which allows the skin to be held gently but tautly between two metal fingers. Because of the ease and rapidity with which the needle may be passed through even tough skin when it is held taut, many wounds may be closed without the use of local anesthesia. Avulsed and loosely hanging skin flaps, usually difficult to manipulate without assistance, are easily handled and sewed with this forceps. Although the photographed instruments are designed for general work, with modifications in size and tip detail instruments of this type should find use in a variety of plastic procedures and in vascular surgery.



Suture forceps designed for suturing skin lacerations. *A*, two examples of the instrument. *B*, the instrument in use.

The instrument is a broad-bladed forceps with a tip composed of two narrow, 0.5 in. (1.3 cm.) long metal prongs that taper to a narrow opening (see figure, *A*). The prongs are serrated on the opposing surfaces for better traction. The skin edge is held with the forceps, and the needle is passed between the metal prongs (see figure, *B*). After the needle has penetrated the skin the forceps may be removed to allow completion of the passage of the needle. The opposite flap is similarly handled, and the suture is tied in the usual manner.

The forceps illustrated here are manufactured by Vernon Dorn, Villa Park, Ill., and are available from Debs Hospital Supply Co., 5990 Northwest Highway, Chicago.

325 Ninth Ave. (4).

EFFECT OF DEXTRAN ON THE VOLHARD CHLORIDE DETERMINATION

E. DuBose Dent Jr., M.D.
Anna R. Wassell, A.B.
and
Frank J. Svec, Baltimore

Recently in the process of performing a determination of the serum chloride level by an application of the Volhard method [1] on the blood of a patient who had received 500 ml. of dextran solution,[2] a cloudy filtrate was obtained at that stage of the procedure in which the silver chloride precipitate is removed. Filtration is a necessary modification if an end point that is reproducible is to be obtained. Without filtration the end point fades rather quickly owing to the fact that silver chloride is more soluble than silver sulfocyanate and therefore reacts with the sulfocyanate:

$$AgCl + SCN^- = AgSCN + Cl^-$$

The principle of filtration is supported by Peters and Van Slyke.[3]

Cloudy filtrates resulted at the same step during repeated determinations of the serum chloride on the blood of this patient for seven days and on the blood of a second patient with a different clinical condition for 24 hours. During this period the serum chloride determinations were also made according to the method of Schales and Schales.[4] In this procedure no difficulty was encountered.

These observations suggested that dextran might be the cause of the cloudy filtrate obtained in the modified Volhard method.[1] Some in vitro experiments were used to determine whether this was true. In determination of chloride concentration of dextran solution, or of pooled serums to which dextran solution had been added in a 1:10 dilution, a cloudy filtrate was obtained at the same step of the procedure. This cloudiness persisted even after repeated filtrations utilizing various grades of Whatman filter paper.

In attempting to produce a clear filtrate in the presence of dextran, it was found that one of two methods might be employed. Allowing the cloudy filtrate to stand overnight before refiltering resulted in a clear filtrate. A second and more expedient method was to heat the cloudy filtrate for one minute in a boiling water bath. After heating, the precipitate of silver chloride could be removed by filtration in the usual manner with Whatman no. 42 filter paper.

From the Department of Pathology, Clinical Chemistry Section, U. S. Public Health Service Hospital.

1. Volhard, J., cited by Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry, Baltimore, Williams & Wilkins Company, 1932, vol. 2: Methods, p. 829.
2. In this study the dextran used consisted of 6% W/V of hydrolyzed fractionated dextran with 0.9% sodium chloride solution.
3. Peters and Van Slyke,[1] p. 830.
4. Schales, O., and Schales, S. S.: A Simple and Accurate Method for the Determination of Chloride in Biological Fluids, J. Biol. Chem. **140**: 879-884, 1941.

These modifications do not interfere with the chloride ion, since the chloride content of the dextran solution was determined as being 153.5 mEq. per liter. (The calculated chloride content should be 153.8 mEq. per liter.) The chloride content of the pooled serums was found to be 109 mEq. per liter. The chloride content of the pooled serums to which dextran solution was added in a 1:10 dilution was 114 mEq. per liter.

In the recent literature [5] that has been reviewed on the subject of plasma expanders, there are reports of slight elevations (less than 5%) in blood chloride levels due to the fact that the various preparations of dextran are suspended in isotonic sodium chloride solution. These articles, however, do not mention any necessary alterations in the method or methods that the authors used for the determinations. The technique described is a necessary modification if the principle of removing the precipitate of silver chloride is to be followed.

SUMMARY

By use of the Volhard method with removal of the silver chloride precipitate by filtration for the determination of serum chloride levels in the blood of a patient who had received 500 ml. of dextran solution, a cloudy filtrate was obtained after filtration with various grades of Whatman filter paper. It was found that this cloudiness is due to the presence of dextran and that a simple technique for clearing the filtrate can be used.

Wyman Park Dr. and 31st St. (11) (Dr. Dent).

5. Bloom, W. L.: Present Status of Plasma Volume Expanders in the Treatment of Shock: Clinical Laboratory Studies, A. M. A. Arch. Surg. **63**: 739-741 (Dec.) 1951. Gray, I.; Siiteri, P. K., and Pulaski, E. J.: Metabolism of Plasma Substitute: Dextran (Macrodex), Proc. Soc. Exper. Biol. & Med. **77**: 626-627, 1951. Turner, F. P.; Butler, B. C.; Smith, M. E., and Scudder, J.: Dextran: An Experimental Plasma Substitute, Surg., Gynec. & Obst. **88**: 661-675, 1949.

STUDY OF PARA-AMINOSALICYLIC ACID INTOLERANCE IN TUBERCULOSIS OF LUNG

Roger S. Mitchell, M.D.
John Schmidt, M.D.
Leslie H. Capel, M.D.
and
Lester Scheel, Ph.D., Trudeau, N. Y.

Para-aminosalicylic acid is coming to be recognized as a key drug in combined drug treatment (with streptomycin or isoniazid) of tuberculosis of the lung. Intolerance to *p*-aminosalicylic acid is widely recognized as a common practical problem in its administration. Intolerance is characteristically noted as gastrointestinal upset coming on about one week or more after the beginning of the drug therapy. The symptoms are anorexia, diarrhea, nausea, and vomiting, in that order of frequency. Some patients are continuously affected, some affected from time to time, and some never affected. The older and sicker the patient, the more likely he is to suffer. This phenomenon is not to be confused with the hypersensitivity reaction characterized by fever, prostration, skin eruptions, nausea, vomiting, and leukopenia.

The cause of the upset has been variously attributed to (1) the drug itself, (2) an impurity contained in the commercial preparation, or (3) a substance that forms on standing in the liquid or in the dry state or both. The common impurity that has been identified in the commercial preparation is meta-aminophenol. In the pure state meta-aminophenol is a colorless water-soluble solid. Meta-aminophenol has been considered the cause of a brownish discoloration that develops in *p*-aminosalicylic acid when it stands, especially in solution. The brownish discoloration has been thought to be roughly related to intolerance to the acid. The biochemical and clinical aspects of this intolerance have been under investigation at the Trudeau-Saranac Institute.

From the Trudeau Sanatorium and the Department of Biochemistry of the Trudeau-Saranac Institute.

The three forms of *p*-aminosalicylic acid used in this study were provided by Hellwig, Inc., Chicago.

OBSERVATIONS

The absorption spectrums of three samples of *p*-aminosalicylic acid dissolved in water at a concentration of 20% are given in figure 1. The absorption spectrums were read on the spectrophotometer immediately after the samples were dissolved.

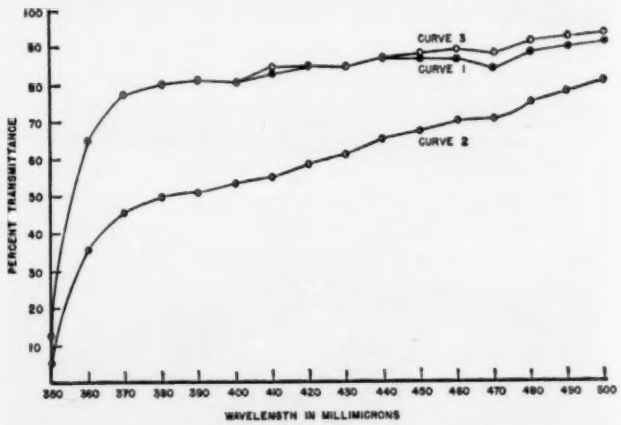


Fig. 1.—Absorption spectrums for three forms of *p*-aminosalicylic acid in water solution.

Curve 1 of figure 1 is the absorption spectrum of a 20% solution of the chemically pure drug. Curve 2 is the absorption spectrum of a 20% solution of an old sample of the drug. This sample had been packed in polyethylene envelopes under nitrogen 18 months before. The crystals were a light tan color when they were placed on a white paper. Curve 3 is the absorption spectrum of a 20% solution of the chemically pure drug to which had been added 4% meta-aminophenol. These data demonstrate that meta-aminophenol does not increase the light absorption when added to chemically pure *p*-aminosalicylic acid in the wave-length region given. It is further shown that a change has taken place in the crystalline composition of the old sample of the drug and that this change is not the formation of meta-aminophenol.

The change in light transmittance at 390 mμ of 20% water solutions of three samples of *p*-aminosalicylic acid is given with respect to time in figure 2. Curve 1 shows the color development of the chemically pure preparation. Curve 2 shows the additional color development of old *p*-aminosalicylic acid in solution. Curve 3 shows the color development of the chemically pure drug with added 4% meta-aminophenol.

It is obvious from these data that the solutions undergo a spontaneous and progressive change. Meta-aminophenol increases the rate of color development after the first few days. The chemically pure *p*-aminosalicylic acid undergoes the most rapid change during the first 24 hours but changes slowly thereafter.

The above observations indicate that the drug in the dry state or in solution undergoes a spontaneous change with time. Since the addition of meta-aminophenol to *p*-aminosalicylic acid in solution did not increase the absorption at the wave-lengths shown, the change is not due to the production of meta-aminophenol alone. The fact that meta-aminophenol speeds the rate of color production suggests that this compound either catalyzes or takes part in the formation of the colored product. It is suggested further that the colored material may be a polymerization product of *p*-aminosalicylic acid or its decomposition products or both.

A small clinical trial was also carried out with three forms of the drug: a sample more than a year old, the chemically pure drug plus 4% meta-aminophenol, and chemically pure *p*-aminosalicylic acid alone. These drugs were given for two weeks in the dose of 12 gm. a day of the acid, or its equivalent in the sodium salt, to 10 patients, 6 with far-advanced, 1 with moderately advanced, and 3 with minimal tuberculosis of the lungs. The oldest patient was 58; the youngest, 20. All had had chemotherapy, either streptomycin or isoniazid combined with *p*-aminosalicylic acid, for a month or more before; all were clinically improving, and none were suffering from symptoms either from their disease or from the treatment. The presence or absence of the symptoms described above was recorded daily. Neither the patients nor the physicians knew which drug was being used; all the patients were receiving either isoniazid or streptomycin as well as the *p*-aminosalicylic acid.

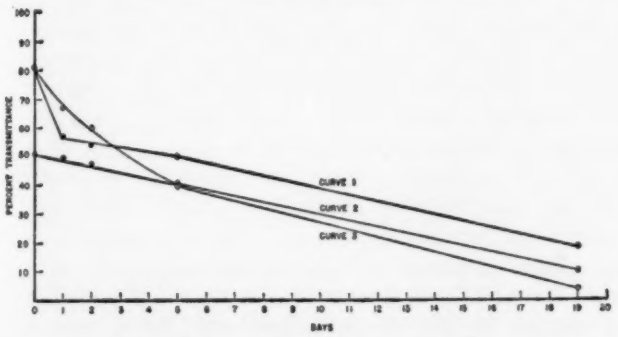


Fig. 2.—Change in light transmittance of three forms of *p*-aminosalicylic acid in water solution.

Of the 10 patients examined, only 5 were symptom-free throughout the investigation. Among the remaining five who had symptoms of intolerance, the different forms of the drug behaved as described below during the two weeks in which each was tried. The chemically pure drug produced one day of mild diarrhea in each of two patients and three days of mild diarrhea in one patient. The chemically pure drug adulterated by 4% meta-aminophenol produced 13 days of mild diarrhea in one patient and 5 days of mild diarrhea in another patient. The old sample of the drug produced symptoms in each of the five patients: 4, 9, and 11 days of diarrhea in each of three patients and more than 10 days of both nausea and diarrhea in two. Interruption of the experiment was necessary in one of the latter patients. All these patients experienced immediate relief when given the standard commercial or chemically pure drug.

SUMMARY AND CONCLUSIONS

From these preliminary observations it is suggested (1) that gastrointestinal upset due to *p*-aminosalicylic acid is very often due to a brown impurity that develops with aging of the drug; (2) that meta-aminophenol, commonly thought to be the cause of intolerance, is not in fact the toxic substance involved in this problem; and (3) that the brownish impurity may be a resinous polymer of *p*-aminosalicylic acid. The latter concept is being investigated further.

Trudeau Sanatorium (Dr. Mitchell).

CLINICAL THERMOMETERS AND URINOMETERS

DETERMINATION OF THEIR ACCURACY

E. Grey Dimond, M.D.
and
Martin H. Andrews, M.D., Kansas City, Kan.

The purpose of this study is to determine the accuracy of some of our present-day clinical instruments, on which the physician relies for important information concerning his patients' status and progress. The study has been limited to the thermometers and urinometers in use at a 500-bed general hospital.

The success of modern medicine does not depend on the absolute accuracy of these instruments either for correct diagnoses or for proper management of the patient. The healing art was far along when the physician estimated temperature rise by the laying on of hands. The "urinologists" of former years could roughly discern whether a person's urine was too concentrated or too dilute.

Today, however, we have at our fingertips numerous instruments of precision that have rightfully taken the place of guesswork in medicine. Many times a physician comes into the modern hospital and sees on his patients' charts incongruous temperature graphs, weight changes, and urine specific gravity recordings. Indeed, sometimes he finds himself wondering whether his own guess would not yield more accurate information.

If he attempts to extract an explanation from the floor nurse, he receives a standard reply that the reading was what the thermometer showed. If he takes the trouble to call the laboratory to ask if the specific gravity of a patient's urine is really 1.040, the reply is that the results were checked twice. On occasion, he may find that his patient has gained (or lost) 7 lb. (3.2 kg.) overnight, and he is puzzled until he discovers that the patient's last weight was recorded from a different scale; then he is further puzzled as to which scale was accurate.

From the Department of Medicine, University of Kansas Medical Center.

Three outstanding reasons for the appearance of incorrect recordings of body temperature and urine specific gravity are obvious: 1. The instrument may be defective and inaccurate. 2. The person who uses the instrument may fail to properly read the results. 3. An accurate result may be incorrectly tabulated on the patient's chart. The latter two factors are exceedingly difficult to remedy, especially when the person involved is untrained and therefore prone to use poor technique and relatively poor observation. However, definite information and remedial measures can be obtained regarding the first factor—the intrinsic accuracy of the instrument.

Thermometers.—Every thermometer in use on all the hospital wards and in the clinics at a large general hospital was tested against a standard thermometer, which was accurate at freezing and boiling points and at all gradations between these points. The clinical thermometers were first identified according to serial number, manufacturer, and type (oral or rectal), then shaken down until the mercury column was below 95 F. The thermometers were then partially submerged in about 2 in. (5 cm.) of water in a constant temperature water

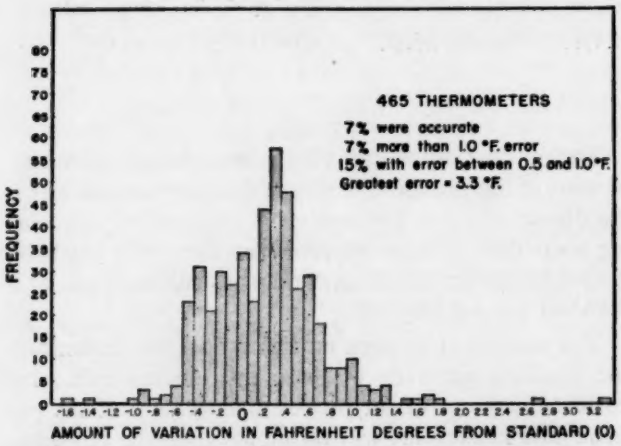

465 THERMOMETERS
7% were accurate
7% more than 1.0 °F. error
15% with error between 0.5 and 1.0 °F.
Greatest error = 3.3 °F.
FREQUENCY
AMOUNT OF VARIATION IN FAHRENHEIT DEGREES FROM STANDARD (0)

Chart showing frequency distribution of variation below and above standard thermometer.

bath for a period of 10 minutes. The highest temperature indicated by the standard thermometer during the 10 minute period was recorded as the standard temperature. The readings of the clinical thermometers were then recorded.

A total of 465 thermometers were tested; of this number, only 34, or about 7%, were exactly in accord with the standard. Another 7% showed variation of one whole degree or more from the standard. About 78% of the total showed variation of less than 0.5 degrees. The greatest error was 3.3 degrees from the standard (see figure).

Many thermometers had defective pigmentation in the etched lines and figures. A few of the thermometers recorded the correct temperature of the water-bath, but the mercury column regressed immediately on removal of the thermometer to the cool room air. Many of the thermometers could be shaken down below 96 F only with considerable difficulty. One thermometer was noted to have the mercury column separated by air. All of these faults are serious and contribute greatly to inaccurate temperature recordings. One wonders how much needless laboratory work was done to find the cause for the unexplained 0.5 degree of fever that must have been found in a considerable number of patients. The fact that most of the wards use nurses' aides to read and record temperatures probably adds another source of inaccuracy.

Urinometers.—The majority of urinometers in use at this hospital were in the main urinalysis laboratory. The remainder were used in student laboratories and the outpatient urology clinic. Each urinometer was tested for accuracy in a container of distilled water that was maintained at the temperature for which each instrument was calibrated.

Of 15 urinometers tested, 4, or about 25%, were exactly accurate. The rest were all inaccurate; they registered from 0.003 to 0.010 below the actual specific gravity of the water. Thus, a specimen of urine might show a specific gravity of 1.005 when the actual recording should be 1.015. Such inaccuracy would obviously vitiate the concentration-dilution test as well as give misleading information in numerous disease conditions. Frequently an unusual specific gravity reading is rechecked by the technician; this is a futile procedure if it is done with the same urinometer or with another inaccurate one.

CONCLUSIONS

Physicians should be cognizant of the frequent inaccuracy of clinical instruments. If a patient has a persistent unexplained temperature elevation to 99.6 F, it is as important to ascertain the accuracy of the thermometer as it is to make cultures of the patient's blood. A persistent failure to concentrate urine to 1.010 or more can very probably be caused by a faulty urinometer. Laboratory technicians and all other persons who use and place reliance on such instruments need to be aware of such possibilities. Even such simple, readily available equipment as the thermometer and the urinometer should be periodically checked for accuracy.

LEPROSY ACQUIRED IN MILITARY SERVICE DURING WORLD WAR II

REPORT OF A CASE

Norman E. Levan, M.D., Bakersfield, Calif.

In 1947 Aycock,[1] in a study of leprosy in American veterans, made the prediction that an appreciable number of cases would result from service in endemic regions during World War II. This report concerns such a case. Similar instances may be anticipated during the next 30 or more years in veterans of both World War II and the Korean campaign who served in endemic regions.

The patient is a white man born in Kansas in 1907. The first symptom of his present illness appeared while he was in military service in the Philippines in July, 1945. At that time, without any preceding injury, a painless, irregularly circular 2 in. (5.08 cm.) ulcer appeared on the left calf. This lesion healed spontaneously, leaving a hypopigmented, anesthetic, atrophic scar. During the next seven years the area of anesthesia slowly enlarged to involve most of the left calf. In December, 1952, there was a painless burn, from a gas heater, at the site of the original ulcer.

1. Aycock, W. L., and Gordon, J. E.: Leprosy in Veterans of American Wars, Am. J. M. Sc. **214**: 329-339 (Sept.) 1947.

The patient was then seen by various physicians, including a neurologist who suspected the possibility of leprosy. The patient was referred to the veterans' facility, Sawtelle, Calif., where extensive studies were done. Findings included a positive histamine reaction, that is, an absence of flare within the anesthetic area on injection of histamine phosphate solution intradermally, and anhidrosis in the same area after injection of pilocarpine. The lepromin test elicited no reaction. An attempt to abolish the positive histamine reaction under hypnosis was unsuccessful; however, the staff felt that the diagnosis of leprosy could not be confirmed, and the patient left the hospital. In the course of the next two months areas of hyperesthesia appeared on the elbows and the left concha. On examination in June, 1953, I noted a small number of faint, pink, hypoesthetic macules with slightly thickened edges on the patient's chest, back, upper arms, and thighs. Histological examination of a specimen from one of these macules showed only slight perivascular round cell infiltration in the upper and midcutis on hematoxylin and eosin staining. However, with the Fite stain, rare acid-fast bacilli were demonstrable, and these were also found in smears of material obtained by the scraped incision method. The lepromin test remained negative. Thus a diagnosis of leprosy, of either the early lepromatous type or the "indeterminate" group,[2] was established.

Review of the patient's family history and his various places of residence provides nothing to indicate that his condition could have been contracted outside of military service. His father was born in Kansas in 1873 and died in 1949 of coronary occlusion. His mother was born in Kentucky in 1881 and died in 1930 of asthma and "dropsy." Neither parent ever lived outside the United States. Two older brothers are both living and well. While not in the armed services, the patient has lived in three cities in the United States: Florence, Kan., from birth until 1940; Salt Lake City, 1940 to 1943; and Bakersfield, Calif., October, 1945, to the present time. From 1943 to 1945, he served in the United States Army in four locations: Camp Roberts, Calif., from October, 1943, to March, 1944; New Guinea, April to September, 1944; Leyte, Philippine Islands, September to December, 1944; and San Fernando, Pampanga Province, Luzon, Philippine Islands, January to September, 1945. While on Luzon, he was quartered on the second floor of a native house.

By arrangement with the local and state health departments, the patient is being treated with sulfoxone (Diasone) sodium on an outpatient basis. He must comply with several regulations for modified isolation.[3] There must be no children under 18 in the household, and children must not be permitted to visit. There can be only a minimum number of adults in the home; there must be no boarders, and adult visitors may not eat or stay overnight in the home. The patient can work only at an occupation in which his contact with other persons is minimal (this patient is a garage employee). He may not shop or attend public functions. He must receive continuous treatment with sulfoxone. These restrictions can be lifted when 12 monthly skin scrapings for acid-fast bacilli have been negative. Since the institution of treatment with sulfoxone, there has been complete disappearance of the macules described and no further increase in the anesthetic and hyperesthetic areas. Acid-fast bacilli ceased to be demonstrable within three months after treatment was begun.

COMMENT

Aycock [1] based his prediction on experiences with veterans of the Spanish-American War, in whom leprosy appeared from 3 to 32 years after exposure. The duration of stay in foreign foci ranged from 9 months to 32 years, but no information was available as to the nature of actual exposure. In this regard, concerning persons first exposed in adult life, it would appear that neither the length nor the intimacy of exposure is a major determinant but that ordinary unrecognized exposure while in endemic regions can result in the infection of certain susceptible persons. The nature of susceptibility is unknown. In World War I, with minor exceptions, American troops did not serve in endemic regions, and Aycock found no suggestion that any veterans acquired leprosy as the result of military service in World War I. He found 11 cases in World War II veterans, but none of these appeared to have been the result of service exposure. Except for a report of two cases that developed in tattoos,[4] I have found no reports of service-connected infections in American veterans of World War II, although the British literature [5] contains a number of such cases.

2741 "H" St.

2. Wade, H. W.: The Classification of Leprosy: A Proposed Synthesis Based Primarily on the Rio de Janeiro-Havana System, Internat. J. Leprosy **20**: 429-462 (Oct.-Dec.) 1952.

3. Gray, H. H.: Hansen's Disease (Leprosy) in California, California's Health **11**: 73-76 (Oct. 31) 1953.

4. Porritt, R. J., and Olsen, R. E.: Two Simultaneous Cases of Leprosy Developing in Tattoos, Am. J. Path. **23**: 805-817 (Sept.) 1947.

5. Doyle, J. O.: Case of Leprosy Seen in a V. D. Clinic in Britain, Brit. M. J. **2**: 261-262 (Aug. 1) 1953. Rogers, J.: Leprosy: Report on Four Cases, ibid. **2**: 259-260 (Aug. 1) 1953.

SPECIAL ARTICLE

THE CLINICAL INVESTIGATOR AND HIS ROLE IN TEACHING, ADMINISTRATION, AND THE CARE OF THE PATIENT

Robert H. Williams, M.D., Seattle

Never before has clinical research received such a glorified position or as much financial and spiritual support as today. The public demands it, Congress has provided for it, medical schools clamor for it, and patients not only tolerate it but sometimes request it. In the last 10 years, there has been a pronounced upsurge of public interest in research, and the amount of money provided,[1] especially by the federal government, has increased greatly (fig. 1). The total expenditure for medical research in the United States increased from an annual rate of about 18 million dollars in 1941 to 181 million dollars in 1951. The increase is out of proportion to both the increase in trained medical research manpower and the increase in national income (fig. 2). This should be viewed not as today's excess but as yesterday's deficiency; the present investment in medical research is only about 7 cents per $100 of national income. An extremely small amount is spent to save lives, compared to that spent for potential destruction of life.

In general, the increased medical research funds have led to a much greater knowledge of diseases and their therapies and have increased the number and quality of teachers. However, in some medical schools certain departments have been accused of putting too much emphasis on research, thereby increasing the administrative duties and decreasing the quality and quantity of teaching and patient care (fig. 3). Medical progress is built on these four pillars, and each should be strong in appro-

From the Department of Medicine, University of Washington School of Medicine.

Presented in part as a presidential address at the annual meeting of the Western Society for Clinical Research, Jan. 29, 1954.

1. Endicott, K. M., and Allen, E. M.: The Growth of Medical Research 1941-1953 and the Role of Public Health Service Research Grants, Science **118**: 337, 1953.

priate proportion, but a satisfactory balance of strength in each of these pillars is often difficult to achieve. It has often been stated that a physician cannot do a satisfactory job as a teacher, investigator, and administrator. It has been maintained that (*a*) scientists cannot be good physicians or teachers, (*b*) teachers cannot be good physicians or scientists, (*c*) administrators cannot be good teachers or scientists, and (*d*) the administrator need not be a good physician, scientist, teacher, or administrator. Such statements have been belied many times by men

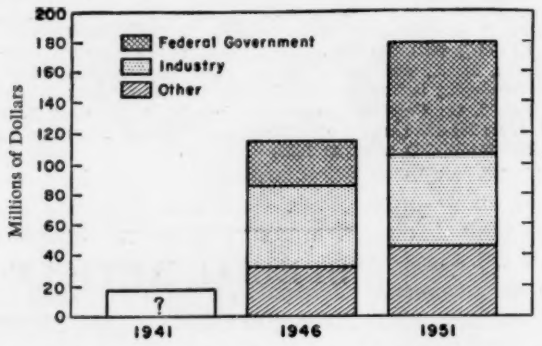


Fig. 1.—Graph showing the funds spent by the federal government, industry, and other groups for medical research (reprinted with permission from Endicott and Allen).

skilled in all four realms. Many physicians have been inadequately acquainted with the virtues and necessities of each of the four pillars and the value of smoothly integrating them. Rather than being mutually exclusive, each has much to offer the other, and, in the final analysis, they are all concerned with patient care. The role of each of the four major pillars of medical progress will now be discussed.

CLINICAL INVESTIGATORS

Personality Traits.—There is no set personality pattern for clinical investigators; they, along with scientists in other fields, show great variety in background, training, objectives, philosophy, and emotions. However, the nature of the work does exert an influence on the type of person attracted and on the development of some of his characteristics. The investigator's background and emotional make-up may influence the type and interpretation of his investigations. This relationship between a scientist's personality and his research deserves further study. In this connection the following ideas expressed by a psychiatrist, Kubie,[2] are of interest. ". . . the emotional problems which arise early in the careers of young scientists are more taxing than are those which occur in other careers. . . . [he] often reaches maturity after a lopsided early development. In this development he resembles many other intellectuals. A typical history is that an intellectually gifted child develops neurotic tendencies which hamper his early aggressive and psychosexual development. If at this point he is intellectually stimulated by one or another of the emotionally significant adults of his life, he is likely to turn away from athletics and the social life which he finds difficult to more bookish activities. . . . The first step in any program of scientific research is to observe natural phenomena while taking care not to alter these phenomena by the very process of observing them. In spite of the most meticulous care, however, the ever-present, unconscious forces of the observer color in some degree the glasses through which he makes even simple observations. Therefore it is out of such tinted observations that he develops his scientific theories. . . . it is impossible for an investigator to prevent the intrusion of his unconscious biases. . . . [There is] . . . a subtle interplay of reason and emotion. . . ."

Indeed, there are some persons in clinical investigation with emotional complexes of the type just described, but, in the close contacts that I have had with many investigators in departments of medicine, this pattern has seemed to be rare. There is a great variety of persons —some have been outstanding athletes, some leaders in civic activities, and many scholarly, broadly cultured, and possessed with both personal charm and emotional stability.

Though most career clinical investigators have had good academic records, having ranked in the upper part of their medical school class, many are not brilliant. Talent is important depending on how, and how much, it is used. Some persons display threads of scientific brilliance that never become sufficiently interwoven into a tangible pattern. They fail to make significant contributions because of too little coordination and integration of their activities. Successful clinical investigators are notably industrious, but they do not always view their efforts as "work," Osler's masterword in medicine, because they may be engulfed by enthusiastic inquisitiveness or insatiable curiosity and goaded by burning ambitions. The investigator's interests are sustained during times of failure as well as success. With a background of scholarship and training, he exercises imagination and originality in conceiving and organizing his experiments.

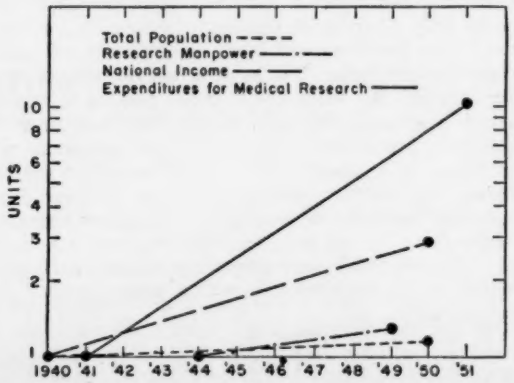


Fig. 2.—Graph showing relationship of increase in expenditures for medical research and increase in research manpower and national income (reprinted with permission from Endicott and Allen).

These are then conducted with initiative, ingenuity, precision, and thoroughness. He is forever on the alert, looking carefully for both the expected and the unexpected results. With perserverance, he pursues his studies from year to year.

Motivation.—The motivating forces for engaging in a career of clinical research are often diffuse and ill-defined. Sometimes, a continuation of natural curiosity in childhood is important. Sometimes, motivation results

2. Kubie, L. S.: Problems of the Scientific Career, Am. Scientist 41: 596, 1953.

from a spirit of dedication and determination to combat a disease that has affected the investigator or a close friend or relative. Occasionally there is only a pseudo-interest in investigation, with a superstructure of craving for distinction and glory; those in this group soon wither. Motivation for clinical investigation may develop while a physician is working as a research fellow with an aim to learn more about a given specialty. The person may

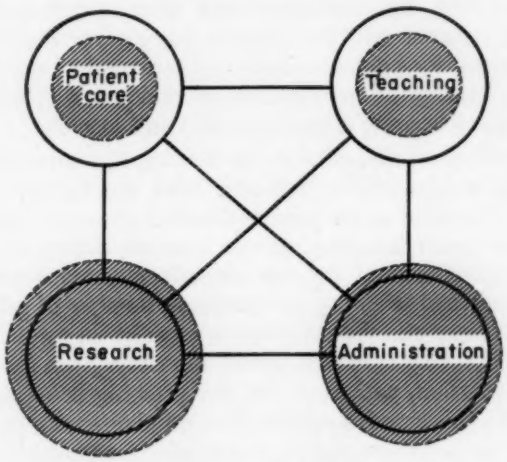


Fig. 3.—Chart showing the four pillars of medicine.

discover an intense interest in, and aptitude for, the research he is doing; with appropriate encouragement from his superior, he may be stimulated to continue in research as a career. This perhaps is one of the commonest patterns for clinical investigators, and it fits a good philosophy, that is, one should do what he can do the best and what he enjoys most—these often coincide. A person with a strong desire to be of service to mankind may select the phase of clinical research in which he believes the immediate needs are great. For example, recently in a discussion of Dr. William Lennox under the heading "Leading Men in Science," it was stated that "for him the epileptic patient is not simply the vehicle of a clinically interesting abnormality but, first and foremost, a suffering individual, socially ostracised and deprived of the right to lead a useful, active and happy life."

Training.—Training is easier if the person has the appropriate spirit. As Jesus said to Nicodemus, "Ye must be born of the spirit!" Patterns for training are as variable as research objectives. In medicine it is desirable that the physician spend approximately three years of training as a house officer and two years as a research fellow, working under the supervision of a wise, successful, and experienced scientist; as John Finley said, "Nothing succeeds like successors." The research fellowship should be used to learn some of the techniques and also the general principles, policies, and objectives of research. During this interval, the research fellow should receive inspiration and sophisticated critique. Considerable supervision should be received during the first year, but less in the second year. Frequent discussions with the supervisor are helpful; even the most experienced investigator profits from discussions with others about his investigations.

Two years in a research fellowship often will indicate the potentialities in research of an investigator. The summation of several good attributes does not necessarily mean that the subject will be a good investigator. For example, he may be highly intelligent, industrious, interested, and fertile of ideas, but yet may fail to make significant contributions. Until good ability in investigation has been demonstrated, it is not best for his future progress and happiness, or for society, for him to plan definitely for a career in research.

Relationship to Others.—As in other professions with many highly capable men working strenuously under emotional tension, temperamental outbursts, jealousy, or envy may impede headway and interfere with fraternalism and scientific progress. Unwarranted criticisms may be made about another investigator and, indeed, great efforts made to discredit him. Despite our excess epinephrine, we must maintain mental composure.

An occasional investigator, in his eagerness to attain glory, may lose some of his integrity in reporting his observations, or he may fail to give adequate credit to other investigators, earning for himself the title of "scientific bandit." Few ideas are absolutely new. A considerable number of closely allied observations have usually been made by other investigators before a great discovery is announced. Once an appropriate background is developed, the same discovery may be made simultaneously by several investigators. Indeed, some of the preliminary observations may be a greater accomplishment than the discovery itself. Thus, credit often needs to be sprinkled on a long path.

Fig. 4.—A scientist presents his research to his peers (reprinted with permission from Steinberg).

Favorable Conditions for the Investigator.—In addition to the appropriate ability, spirit, and training, it is important that the investigator also have adequate space, equipment, and supplies. Moreover, it is important to have an atmosphere conducive to work—inspiration from colleagues and a minimum of distractions such as worries about finances and domestic affairs. The un-

3. Deleted on proof.

knowing sometimes do not have adequate patience with the scientist. They are perplexed by his tenacity of purpose, his perseverance despite setbacks, his spirit of adventure, insatiable curiosity, and love of science. Claude Bernard said, "Those who do not know the torment of the unknown cannot have the joy of discovery."

The scientist needs ample freedom in the problems that he investigates and the approach that he uses. He should not have his interests twisted just to get more readily available financing nor should administrative restraints hamper unduly his research.

Arthus has said, "Indeed it is not in the turmoil of social life, nor through academic chats nor laboratory gossip that we come to see the light, that interpretations become clear, that experiments are conceived, and conclusions reached. It is through solitary, profound and sustained meditation." With meditative gestation, one can weave the isolated fabrics of scientific observation into a well-suited pattern for clinical application.

The clinical investigator receives stimulation from both patients and the searching questions of students. The statement "Necessity is the mother of invention" certainly applies in clinical investigation. Observations of patients continuing to suffer, despite the best we have to offer, goad the investigator to ardent efforts toward relief. This stimulus keeps his goals clearly defined, incites tenacity of purpose, and nurtures progress toward fruition.

PATIENT CARE AND CLINICAL INVESTIGATION

Fusion of the Science of Medicine with the Art of Medicine.—Through a lack of understanding there has been, as stated by Atchley,[4] a "false legend that a scientific training with its inculcation of logic and critique smothered man's finer feelings and led to cold and wholly objective attitudes." Actually, when a humanist bathes in scientific knowledge, the humanism is not washed away but acquires greater charm and a deeper rooting as a result of greater wisdom and understanding. The art of medicine can reign supreme only when there is a richly humane application of the best scientific knowledge to the problems of the patient; in the absence of scientific information the art stands as a weak and ghostly structure. Contrariwise, the physician blessed with great scientific skills, but not imbued with the humanistic spirit or lacking appropriate goals and morals, can but briefly bask in the halo of the art of medicine.

The necessity for acquiring a great deal of scientific knowledge and critique has engendered psychogenic dysphagia in some clinicians. Many clinicians, particularly medical school graduates of more than two decades ago, have been inclined to label as "theoretical" and nonpragmatic any research that does not immediately disclose a superior test or treatment, although a much better understanding of disease and the rationale of specific therapy might be derived from it. Actually, such information is quite "practical," because it provides a logical basis for handling each patient in accordance with the individual problems he presents. The value of acquiring understanding, as well as wisdom, is emphasized in Proverbs 4:7: "Wisdom is the principal thing; therefore get wisdom: and with all thy getting get understanding."

Research of Today the Practice of Tomorrow.—With the development of astute clinical investigators, the interval from scientific discovery to routine clinical use has been shortened considerably. They have also helped in getting the research of the basic scientists to reap fruition in clinical medicine much more rapidly and abundantly. The intellectual and other resources of the basic scientist and the clinical investigator have been combined for mutual benefit and the good of mankind. With the acquisition of greater scientific critique the physician has become a better student and teacher.

Care of the Patient.—Very few clinical investigators engage exclusively in research. They usually must take very good care of the patient whether or not he presents any research interests; this is a responsibility enjoyed by most clinicians. For optimal effectiveness in clinical research and teaching, an adequate number of patients is necessary and the investigator must be an astute clinician. Excellent care of the patient must be given foremost consideration, with research and teaching being coincidental. This care is a necessity for good research; the best teaching is by precept and example. As Peabody said, "The secret of the care of the patient is in caring for the patient." The physician must have a very sincere interest in and loyal concern for the patient and use a kind and gentle approach. Too often there is a fleeting and unconvincing sympathy with incongruity of words and actions; when there is genuine, deep-rooted sympathy and true compassion, it is calming and comforting to the patient and his family. Even though there are provided hormones, antibiotics, and other tangible therapies that achieve astonishing results, humane considerations must not be neglected. In conditions in which such objective treatment is to no avail, humanistic talents must be exercised to the utmost. The physician's attitudes, abilities, and actions must be such that the patient develops respect, faith, and warm regard for him. If the patient does not develop deep-rooted confidence in his physician and a genuine spirit of close friendship, the most brilliant plans may be ineffective or rejected.

Particularly after the physician has become well-acquainted with the patient, it is helpful for him to have a cheerful and friendly spirit without sacrificing his concern or poise. The approach to and care of the patient must be adjusted to the patient's personality traits, previous environment, background, and his present illness. A psychodynamic approach is often needed and is very important. The physician must be thorough, precise, and wise in the execution of diagnostic and therapeutic procedures. He must give serious consideration to even minute details that may make the patient more comfortable and give him a better peace of mind. Many of the patient's anxieties may be alleviated by appropriate explanations of some of the manifestations of his disease, along with the rationale for and possible benefits from the more major diagnostic and therapeutic procedures. It is impatience, thoughtlessness, and neglect along these lines that often lead to corrosion of rapport and impairment of the efficacy of some of the physician's technical skills. Many patients prefer sacrificing some science for human-

4. Atchley, D. W.: The Healer and the Scientist, Saturday Review 37:7, 1954.

ism. The development of scientific skill should not cause us to forget kindness, compassion, and warm regard for the patient. Here the physician today is in a much better position than were his forefathers, because the acquisition of medical knowledge, and a better understanding of it, has promoted simplicity, clarity, frankness, and honesty in talking with the patient; no longer need he dwell in a mythical, mysterious, vague, and supercilious atmosphere. He must offer as much reassurance, encouragement, and hope as the situation justifies. To bring happiness and to assuage anguish helps in the healing process, particularly in patients with marked emotional disturbance and mental stress. It is well to heed Corinthians 1, 13:13: "And now abideth faith, hope, and love, these three; but the greatest of these is love." Usually the healing cults make sure that these abide, and this accounts for many of the dramatic testimonials offered. When the physician is too nihilistic and discouraging, the patient may, in desperation, seek aid from quacks, frequently with ill consequences somatically and financially. On the other hand, the physician must not be persuaded to engage in adventurous and illogical therapies that do more harm than good.

Clinical Investigation.—The idea of doing research on patients should not provoke the alarm that it sometimes does. Two of the meanings given for "research" are "careful search" and "studious inquiry." In day-to-day routine practice, every good physician gives his patient a certain type of therapy, observes the patient carefully, and may shift the dosage or may try another type of therapy—thus it is a type of experimentation. The better trained the physician is in investigative critique, the more effectively can he set up an objective plan of study. While experimentation on patients is the rule, it should not be carried too far.[5] Although it is difficult to draw a sharp limit to permissible procedures, it is important that the limits be neither too restrictive nor too loose; either extreme would be harmful to society. Numerous factors are concerned with any major experiment and all of these must be weighed carefully. The patient's consent should be obtained, especially whenever the investigation has possibilities of danger. "The patient, however humble and however ill, in whatever degree derelict and forlorn, has sacred rights which the physician must always put ahead of his burning curiosity," writes Bean.[6] Obtaining the patient's consent is not necessarily a differentiation between right and wrong. Some procedures may be legal technically but wrong morally and some illegal but right morally. The laws are not complete or perfect, and the interpretation of some of them varies in the best legal circles. There are two additional steps that are helpful in making a decision. First, the investigator should test his reservoir of knowledge, philosophy, and integrity by frankly asking himself if he, under similar circumstances, would be willing for another investigator to do the experiment on him and his immediate family. An affirmative answer does not necessarily constitute justification, but it is a major step in that direction. Second, he should get the advice and opinion of several well-qualified persons, thereby strengthening scientific and moral judgment. Indeed, it is advisable to have a standing clinical investigative committee to which can be referred problems that may have significant hazards. In the better clinical investigative circles, the question of illegality and moral necrosis in research rarely present themselves. Moreover, the most intelligent patients tend to be the most willing to cooperate in clinical research.

The following plan has often been used by myself and many others in testing new drugs. 1. Extensive pathological, biochemical, physiological, and pharmacological studies are made in animals with the upper limit of dosage being many times that ever considered to be necessary in man. 2. Patients with far-advanced cancer or some other such hopeless disease are given very small doses, with progressive increments to levels several times those ordinarily regarded as necessary for the desired effect. Careful observations are made of the clinical status of the patient and of laboratory studies, particularly those that might indicate damage to the bone marrow, liver, and kidney. 3. The drug is given to the usual type of patient whom it is desired to treat, beginning with relatively small doses and progressively increasing them. It is best not to start treatment of more than a few patients until the long-range effects have been studied. Even if such studies have been conducted in animals, some of the

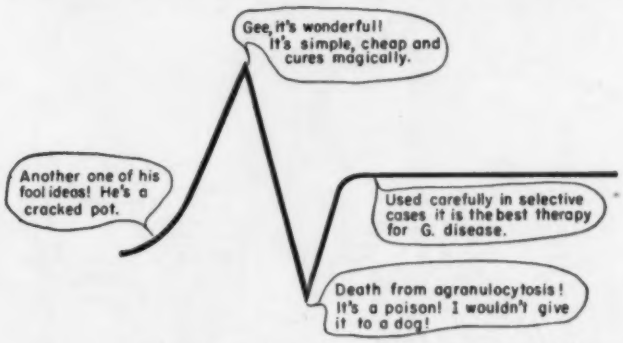

Gee, it's wonderful! It's simple, cheap and cures magically.
Another one of his fool ideas! He's a cracked pot.
Used carefully in selective cases it is the best therapy for G. disease.
Death from agranulocytosis! It's a poison! I wouldn't give it to a dog!

Fig. 5.—Oscillations in the development of a drug.

ill effects may not appear in that species or not be noted. In the process of testing the clinical applicability of a given compound, it is important that the analyses be critical, but not hypercritical. Figure 5 illustrates some of the common reactions of investigators, along with extreme swings in enthusiasm that may accompany the clinical study of new drugs. Even if the responsible investigator exercises appropriate conservatism in his claims, some other investigators or overzealous pharmaceutical companies may cause an unjustified mushrooming of interest. However, congratulations are due the better pharmaceutical companies for their caution in the release of new drugs, often in the face of enormous pressure from practicing physicians, legislators, and others. Special appreciation is owed the Food and Drug Administration for doing a superb job in protecting the public from dangerous drugs and for preventing fraudulent claims regarding other compounds.

TEACHING AND CLINICAL INVESTIGATION

Since the doors of the clinical domain have, in the last few decades, been opened far wider to the knowledge of the basic scientists and since basic science research

5. Shimkin, M. B.: Problem of Experimentation on Human Beings: Research Worker's Point of View, Science **117**: 205, 1953.

6. Bean, W. B.: A Testament of Duty: Some Strictures on Moral Responsibilities in Clinical Research, J. Lab. & Clin. Med. **39**: 3, 1952.

has been conducted abundantly in clinical areas, there has been a great transformation in the teaching of medicine. As it is in research and patient care that ". . . the atmosphere is experimental, the mood is inquiring, the goal is understanding." [4] With the replacement of empiricism and mysticism by knowledge and understanding, unfounded dogmatic dictums and traditional superstition have been shoved into the background. Now that medicine is reaching maturity as an applied science, adequate evidence must be provided before a concept is accepted as established.

Although the full-time staff should perform a considerable amount of teaching and plan the organization of the teaching and research, since they have had special training, experience, and skill in this line, it is very important to utilize the services of as many as possible well-qualified physicians engaged primarily in the practice of medicine—the so-called part-time staff. When the full-time staff attempts to do all the teaching, the load is so great that research tends to be neglected, with consequent deterioration of teaching in quantity and in quality—the latter partly because enthusiasm, one of the keys to success in teaching, is lost when the routine burden becomes heavy and long. The part-time staff members often volunteer their time and, as a result of their extensive experience in practice, add certain approaches that may be touched on too lightly by the full-time staff. The experience also accomplishes a good deal in other ways. 1. The part-time physician increases his knowledge and is stimulated by students and colleagues. 2. By helping to interpret the objectives and accomplishments of the medical school to the community, he contributes to the progress of medicine both spiritually and financially. My experience with the physicians in this group has stimulated warm regard and profound appreciation for them.

Fig. 6.—The staff member too can learn.

With the rapid growth of medical knowledge, much of which is made readily available to every physician, the task of keeping abreast of all the information exceeds the capacity of the best pair of cerebral hemispheres. Students often acquire facts that are not known to the physician-in-chief, or certain other staff members; such supplementary knowledge, when diplomatically presented, should be welcomed. It behooves the staff member to become a leading student; this can be the only firm basis for engendering respect, admiration, and warm regard; his many more years of training and experience will have netted him a vast storehouse of knowledge that he can apply with great proficiency. In contrast, he may be branded as a "stuffed shirt" and impostor if he attempts to create an atmosphere of omniscience by making an occasional formal appearance before the students, garbed as a superauthoritarian and surrounded with a bodyguard of associates and residents to "stiff-arm" any challenge of this authority until he can drop his few pearls and then remain aloof until the "next show."

There should be frequent check-ups on the efficiency of the various teaching programs. Although this can be done in many different ways, one of the most effective is to obtain the students' evaluations of the lectures and all aspects of the physician's performance on ward rounds. Whereas students do not know as well as the staff what they should be taught, they are the ones who can tell best if they are learning what the instructor is attempting to teach. If the teaching is ineffective, efforts should be made to correct it by changing the methods and/or the duties of the teacher.

With the rapid progress of medicine and the ever-increasing additions and modifications, it is more important that the student be taught broad concepts, organized plans of approach using scientific critique rather than many, many more facts than he can understand or retain. Efforts should be made to stimulate his curiosity, to encourage him to develop inquisitiveness, and to teach him some of the general principles of research and to illustrate some of these principles by having him participate in some aspect of research. It is important for him to get some perspective of research, even if he is to enter general practice in a small town. For example, consider the status of cortisone, particularly in the first year after it was introduced. Many papers were written but few reviews, and very little was in textbooks. Thus, the practitioner could choose between (*a*) not using the drug or (*b*) analyzing original articles critically. He could have gotten his information from an expert at a medical meeting or postgraduate course, but he could have acquired this much more efficiently if he had had adequate basic training.

Considerable alteration in our teaching curriculum is needed, particularly to promote better integration of the teaching in various departments; many conjoint exercises are indicated. Although a patient usually presents himself with complaints indicating a disorder in a functioning unit,[7] such as respiration or micturition, there usually are morphological, biochemical, and physiological alterations. For appropriate therapy there may be necessitated a good understanding of bacteriology, drug action, surgery, x-ray, or of any or all of the sciences taught in medical school. Not only the student would benefit from a greater coordination of teaching, but the instructor, in studying what the various departments have to offer, would also profit by obtaining a better over-all perspective in teaching. A few patients should be studied even in the first year of medical school. The problems of patients serve as a stimulus for reading books or journals; with some disorders, considerable knowledge may be ac-

7. Atchley, D. W.: The Orientation of an Undergraduate Medical Curriculum, Science **104**: 67, 1946.

quired by prolonged close observation of the patient, but in others proportionately more time is needed for reading. The physician can do his best job in teaching by handling the patient and his problems superbly.

Postgraduate Training.—A physician may have an excellent training as a student and house officer, but, if he engages busily in practice and neglects continuous nurturing of his talents with scientific journals and frequent replenishment at medical meetings or medical centers, he will eventually discover that he is distressingly behind, and it may then be necessary for him to take off several months for a complete overhauling. Some of these physicians are the "cotton-farmers of medicine." (Cotton farmers know that instead of planting cotton every year they should periodically plant some such thing as soybeans to enrich the land, but this constitutes some loss of profit and it is postponed from year to year until the land is "worn out.") Pruning of the obsolete twigs of information on the scientific tree of knowledge and grafting on new facts are perennial duties. The acquisition of a good critique as a medical student and house officer makes "the take" much easier.

ADMINISTRATION AND CLINICAL INVESTIGATION

Growing pains have been associated with administration. Similar difficulties were encountered in teaching with the introduction of students to the wards by Osler, and later the appointment of a staff for full-time work. Also there was resentment to and failure of appreciation of the full-scale application of basic research to the solution of patients' problems. Now, however, with better understanding of the values of the pillars of medicine they are mutually respected and welcomed by most physicians as valuable additions. The main obstacles to good administration have been the failure to recognize how much it has to offer to teaching and research and the failure to realize its scope and the type of person required to handle it. A good administrator of teaching and research must be more than a good business manager, economic expert, efficient logistician, and skilled personnel director. He must be intimately acquainted with the problems and objectives of teaching and research in order that he may have an appropriate philosophy and goal; otherwise, he may do a beautiful job administering, but in the wrong direction— just as Roy Riegal who, in making a beautiful run in the Rose Bowl, headed for the wrong goal. Although we do not consider making a man a football coach unless he has played football, it is evident that the best player may not make the best coach. Likewise, in medicine there are good investigators who make poor administrators, but there are also "triple-threat" men who are adept at teaching, investigation, and administration. Such persons are especially valuable. The art of effective administration in clinical medicine requires great versatility, including intimate knowledge of teaching and research. However, all of these skills are very valuable and the sooner the merits of each are recognized, respected, and appreciated the greater progress can be made in each direction, the happier the participants will be, and the richer will be the benefits to mankind. The cause for good administration has been hurt somewhat by the deplorations by leading educators of researchers becoming administrators. For example, Alan Gregg stated: "The extraordinary feature of medical research in America in our times is the frequency with which demonstrated ability in research is rewarded by being extinguished." Whereas this does apply in some instances, in other instances the specific investigator, by assuming administrative responsibilities, may do less investigation, research in general may profit enormously. For example, in my opinion it was the administrative feats of William H. Welch as much as anything else that projected and sustained the ascension of the Johns Hopkins Medical School to heights of glory. Arriving first on the scene, with a background of scholarship, broad interests, and great vision, he interested a group of young teachers and investigators in coming to that school, nurtured their activities in an optimal manner, and planned many new adventures that were to become patterns for the world in

Fig. 7.—The next show begins.

teaching and research. Indeed, he remained "close to the steering wheel" for approximately 50 years. Such a leader invokes many chain reactions with far-reaching benefits.

Two factors, especially, indicate the great need for good administration in teaching. First, the enormous volume of medical knowledge requires a large staff, very good planning, and excellent organization of the teaching program in order to attain optimal efficiency. Second, it is very important that the teaching given by members of the same and other departments be coordinated and integrated. There should be satisfactory continuity with neither too many omissions nor repetitions. It is also important for the administrator to assure the appropriate orientation, familiarity with and approval of the objectives, and the maintenance of a good and enthusiastic spirit among students and staff members.

A good department of medicine should have as its chief a man engaged full time in teaching, research, and

associated duties. It is also best to have full-time staff members to head units in allergy, arthritis, cardiology, dermatology, gastroenterology, hematology, infectious diseases, kidney diseases, metabolism, neurology, and pulmonary diseases. They are all phases of internal medicine, but have varying degrees of deviation from the central core, perhaps cardiology being closest and dermatology furthest away; each has its own phase of teaching and research that must be given special consideration. It is generally best for these units to be well integrated in one department, yet permitted considerable freedom of operation. With appropriate organization and good spirit, a considerable amount may be gained by this symbiosis and relatively little is lost.

In the large departments of the better medical schools, research has assumed proportions of big business, utilizing a large number of personnel, great quantities of expensive equipment and supplies, extensive amounts of laboratory space, high-quality animal quarters, a research ward, etc. Many problems arise concerning obtainment of funds, objectives in specific research, allocation of space and other items, recruiting of personnel, interpersonal relationships, responsibilities to patients, and interrelationships of teaching and research. More than a quarter of a million dollars a year may be spent by one department. Indeed, so much is at stake, both tangible and intangible, that it behooves an institution to be most careful in choosing a good executive paying particular attention to the honor and glory accorded, the duties involved and the remuneration. An executive officer of a department should have as much assistance as possible from business offices and supersecretaries. In order to do the best job as an administrator, he must continue to engage personally in research and teaching. In addition to giving his position a better flavor, it makes him a better administrator, because he is more aware of the problems, develops a more realistic philosophy, and can formulate the objectives more clearly and accurately. With these accomplishments and with the intermingling with other teachers and investigators, there is greater mutual respect and understanding of the value of smooth coordination of teaching, research, and administration, with less risk of undue infringement on the freedom of other investigators and teachers. The administrator should not be one viewed by the investigator as a "necessary evil" who must be tolerated ("the more he stays out of the lab the better"). The administrator should not visualize the investigator as being too narrow in knowledge to associate closely with him and his colleagues. Between the better administrators and investigators no schism exists. With the novice investigator, through misunderstanding, a problem sometimes develops regarding his freedom. As stated by Kidd [8]: "The varying capability of individuals sets limits on freedom. Full freedom is not an immutable natural right of all investigators. There is at times a tendency to identify 'the freedom of science' with the right of any investigator to complete independence. Freedom is predicated upon the exercise of mature judgment by trained minds. The right of an investigator to freedom in his work, i. e., to plan his work and to receive the resources to carry it out, is earned by achievement. Junior investigators must learn techniques and develop competence by working in collaboration with persons who have demonstrated their ability before extensive freedom of action and resources can be profitably put at their disposal."

Many of the great discoveries have been based on hypotheses that originally seemed illogical to most persons other than the discoverer. Indeed, one reason why many major discoveries are made by young persons is that they have not yet learned many of the traditional dogmatic dictums than run counter to their hypotheses. An example of this was related by Dr. George Minot, Nobel prize winner for his work on the use of liver in the treatment of pernicious anemia. After spending several months at the Peter Bent Brigham Hospital in what seemed to the physician-in-chief, Dr. Henry Christian, as futile attempts to show that liver was efficacious, Dr. Minot was called into the office of the chief and told something like the following. "Minot, if you think liver is any good in the treatment of anemia why don't you transfer your patients to the Huntingdon Hospital [a less active, cancer hospital] and you can give them liver until your heart is content. You are upsetting all the nurses and dietitians in the place." This, coming from the chief, left Dr. Minot somewhat disconsolate, but on second thought he decided that it might be a good idea. He transferred three of his patients. One of them was an Italian patient who, curiously enough, loved raw liver and ate several times the quantity that had been recommended. A reticulocyte response was observed. This was the clue that ultimately led to the isolation of vitamin B_{12}. Dr. Henry Jackson told me that in the earlier phases of Dr. Minot's study, Dr. Francis Peabody asked him why Dr. Minot continued to test the effects of liver when it had already been "proved" to be ineffective.

Research Granting Agencies.—Many of the large funds for research are granted on the recommendation of a board of scientists who analyze carefully the research proposal and the qualifications of the investigators. Sometimes not enough freedom for the investigator is permitted when the judgment for grant awards is based predominantly on the way the application is written, particularly the experimental design, rather than on the background and characteristics of the investigator. As Richter [9] mentioned, experimental designs tend to breed "team research," which "serves a purpose in developing and applying ideas; it rarely produces new ideas." Large teams increase the quantity of research, but sometimes at the expense of quality. A poor investigator may write an excellent design of an experiment or vice versa. Indeed, some of the best observations may be unrelated to the proposed experiments. Careful study should be given both to the investigator and to his planned experiments, varying the degree of emphasis as indicated.

One great concern about the present large scale of financial support for research is whether it can be maintained. In the event of sudden withdrawal, the impact may be disastrous to research and teaching in some medical schools. The grantors, as well as medical schools, have taken steps to help avoid this.

8. Kidd, C. V.: Research Planning and Research Policy: Scientists and Administrators, Science **118**: 147, 1953.

9. Richter, C. P.: Free Research Versus Design Research, Science **118**: 91, 1953.

Effect of Standardization by Other Agencies.—The various boards for certification of medical specialties have done a great deal to shape graduate teaching and have influenced research considerably. Though many benefits are derived from such standardized programs, often there is too little flexibility for optimal progress. House officer training programs are much too stereotyped. As Christian [10] states: ". . . uniformity usually is based on scaling up the inferior and scaling down the superior, with resultant mediocrity."

Some medical journals have overstandardized the body of papers, but have not standardized the portion that certainly should be, the references. Albright and others have demonstrated how sparkling individuality in medical prose lends greater interest, charm, and clarity than the usual superconventionality.

PANORAMA OF MEDICINE

Medicine has a noble heritage with an abundant supply of intellectual giants, many of whom have glorified their profession and reached the empyrean. Surgery, drug therapy, irradiation, psychodynamic approaches, and other methods have done an enormous amount to stimulate faith, assuage anguish, give hope and courage, replace sorrow with happiness, and bring about a much better state of health. Many eulogies to the profession have been given, of which the following examples may be cited:

> If a doctor's life may not be a divine vocation, then no life is a vocation, and nothing is divine.—Stephen Paget.[11]

> For their patience with the stupid and the cowardly,
> for their quiet devotion to the inevitable truth,
> for their constant courage and unquenchable hope,
> for their cheerfulness even in the darkest hours,
> for their faith in humanity even when they see it at its worst,
> for what they have sacrificed and what they have forgiven,
> I for one am deeply grateful.
>
> —Claude M. Fuess.[12]

> There are men and classes of men that stand above the common herd; the soldier, the sailor, and the shepherd not infrequently; the artist rarely, rarelier still, the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilization; and when that stage of man is done with, and only remembered to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practice an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, Heraclean cheerfulness and courage. So it is that he brings air and cheer into the sickroom, and often enough, though not so often as he wishes, brings healing.—Robert Louis Stevenson.[13]

We of the medical profession like to respond to the beckoning call of greatness, experiencing titillation of our ego and resonation of our pride as we bask in the traditional glory of our noble profession, but how many of us have personally emanated enough brilliance in science and richness in humanism to dwell within the halo of so much praise and honor? In working with our patients, do we have enough understanding, deep-rooted sympathy, genuine interest, and loyal concern? When the problem is difficult and progress is slow, do we impart enough cheerfulness, warm friendliness, hope, and encouragement? With derelict, forlorn, and unreasonable patients, do we exhibit enough patience, tact, kindness, gentleness, forgiveness, generosity in time and attention, and faith in humanity? Do we give too much consideration to financial rewards? Do we have as much scientific knowledge and understanding as we should? Do we have enough spirit of fraternalism but very little jealousy and envy? You know as well as I that many of us are guilty in one way or another. Many of us want to be called great but do not want to task the powers of our minds and bodies enough to be great. In addition to attempting to correct our faults, we are obligated to do our share in increasing the stature and glory of our profession by nurturing with increasing intensity the roots of the science; our debt is not repaid solely by the honest, intelligent, and sound practice of medicine.

ANTICIPATION IN MEDICAL PROGRESS

Research.—Whereas all phases of research will continue to expand markedly, there will be an enormous increase in clinical investigation, including studies of basic phenomena and ones requiring very refined techniques. Experience has shown the need for studying the function of organs in their natural status. One may anticipate emphasis on (*a*) the effect of physical agents, e. g., ultrasonics and cosmic rays; (*b*) enzyme systems, including enzyme adaptation; (*c*) physicochemical properties of genes and other individual intracellular components; and (*d*) the value of submicroscopic studies of normal and diseased tissue. The parade of drug testing will increase enormously, and there also will be more extensive studies on the long-range effects, antagonisms, augmentations, and synergisms; drugs with improved specificity in actions will be utilized. Surgery will make considerable progress, with plastic and other corrective procedures emphasized and with relatively less use for physiological alterations such as hypertension, thyrotoxicosis, benign prostatic hypertrophy, and cancer. There will be a considerable increase in the money available for research, much more security, better organization and long-range planning, better integration, and more collaboration.

Patient Care.—Clinical research will be more abundantly and effectively practiced by all physicians. Diagnoses will be better established, the type of therapy will be more specific, and its effects will be measured much more quantitatively. The science of medicine will be blended more smoothly with humanism, and the latter will be practiced with greater skill. There will be more systematic study of the environmental and social influences than ever before. Enormous progress will be made in the understanding of psychobiological integrations and the role of psychodynamics in disease. Medical economics will become much more satisfactory for patients and the average physician. There will be a great increase in the small clinic type of practice.

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10. Christian, H. A.: Present Day Undesirable Trends in the Training of Physicians and of Teachers of Internal Medicine, Ann. Int. Med. **33**: 533, 1950.

11. Paget, S., cited by Fuess, C. M.: As Others See You, New England J. Med. **243**: 435, 1950.

12. Fuess, C. M.: As Others See You, New England J. Med. **243**: 435, 1950.

13. Stevenson, R. L.: Works, New York, Charles Scribner & Sons, 1909, vol. 16, p. 91.

Teaching.—There will be a considerable increase in the understanding of the mechanisms of disease and rationale for therapy. The student will become far more familiar with the principles of research and will develop an appropriate scientific critique. Problems of patients will be considered earlier in the medical school curriculum, and this will be the text for teaching simultaneously all factors concerned with a functioning unit, e. g., respiration and micturition. There will be many more conjoint exercises in medical school with much better coordination and integration of the teaching of different departments. The over-all objectives will be clearer, and there will be greater teamwork in their accomplishments. The student will be indoctrinated better with respect to the philosophy of medicine. There will be more emphasis on acquiring the appropriate approach and background for working out a patient's problem and less didacticism. There will be a great increase in the quality and quantity of postgraduate training.

It may be stated that while we can be proud of our rich accomplishments of the past, we look very hopefully to the future for making great contributions to human welfare and happiness. This will necessitate a greater integration of teaching, research, and administration directed toward the ultimate goal of better care of the patient in every respect.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

APPARATUS ACCEPTED

The following additional products have been accepted as conforming to the rules of the Council on Physical Medicine and Rehabilitation of the American Medical Association for inclusion in Apparatus Accepted. A copy of the rules on which the Council bases its action will be sent on application.

RALPH E. DE FOREST, M.D., *Secretary.*

Hague Cataract Lamp, Model 395

American Optical Company (Instrument Division), Box A, Buffalo 15.

The Hague Cataract Lamp, Model 395 (also referred to as the A. O. Hague Cataract Lamp) is designed to utilize, for diagnostic purposes, a band of ultraviolet radiation that adjoins the violet portion of the visible spectrum. If the lamp is lighted five to seven minutes before use, so as to reach equilibrium, it gives strong radiation around 375 mμ. Shorter wavelengths are absorbed by a special glass filter.

Hague Cataract Lamp, Model 395

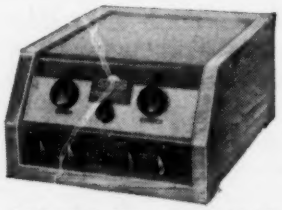
Transmitted wavelengths give fluorescence in the lens of the eye. Radiation from this lamp will also bring about fluorescence in merbromin, fluorescein, thimerosal, riboflavin, quinine sulfate, skin, fingernails, and normal tooth substance.

The apparatus requires 60 cycle alternating current at 120 volts and draws 100 watts. It is equipped with a handle and is connected by a cable to the transformer. The lamp and cord weigh 1 kg. (2 lb. 3 oz.); the transformer weighs 5.1 kg. (11 lb. 7 oz.). Packed for shipment the entire assembly measures 46 by 43 by 33 cm. (18 by 17 by 13 in.) and weighs 9.5 kg. (21 lb.).

Audivox Audiometer, Model 7B

Audivox, Inc. (Successor to Western Electric Hearing Aid Division), 123 Worcester St., Boston 18.

The Audivox Audiometer, Model 7B, is a pure tone audiometer for diagnostic purposes, which is available either as a portable (7BP) or as a desk (7BD) model. Packed for shipment it measures 42 by 48 by 29 cm. (16½ by 19 by 11¼ in.) and weighs 12.3 kg. (27 lb. 4 oz.). The shipping weight includes the following accessories: double headband, power cord, audiogram cards, spare fuse, matched phones, air receiver cords, instruction manual, and wrench kit. The following accessories are not included in the shipping weight: microphone, bone conduction receiver and cord, and adapter for bone receiver.



Audivox Audiometer, Model 7B

The instrument measures 30.5 by 41 by 20 cm. (12 by 16 by 8 in.) and weighs 9.6 kg. (21 lb. 4 oz.). It requires 60 cycle alternating current at either 110 to 120 volts or 220 to 240 volts; the power consumption is 35 watts.

Paust Electronic Stimulator, Model 50-C

Paust Manufacturing Co., 6011 Ridge Ave., Chicago 26.

The Paust Electronic Stimulator, Model 50-C, is a generator of low voltage currents that stimulates the contraction of normally innervated voluntary muscles. It is small and light enough to be carried about and set on a table. When the case is closed, it measures 34 (height) by 27 by 23 cm. (13¼ by 10¾ by 9 in.) and weighs 6.2 kg. (14 lb.). When the case is opened by removing the front, the slanting control panel is exposed. The apparatus requires a source of 60 cycle alternating current at 110 to 125 volts and draws 20 watts.

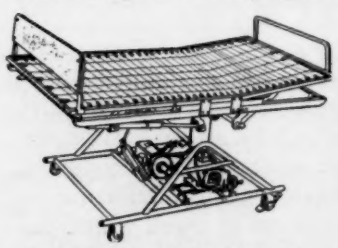
Paust Electronic Stimulator, Model 50-C

The control panel has two jacks marked "No. 1 Patient Circuit" and "No. 2 Patient Circuit." Between them is a switch marked "Circuit Control," which is so connected that in one position it causes the two patient circuits to operate simultaneously, whereas in the other position it causes them to alternate. For each of the two patient circuits a separate "Intensity Control" in the form of a dial is provided. In addition, there is a frequency control, a seconds-time control, a timer, a monitor light, and a place for a fuse.

Burns Rocking Bed, Model V-3

C. A. Burns, P. O. Box 1020, Denton, Texas.

The Burns Rocking Bed, Model V-3, is intended to provide artificial respiration for patients with partial paralysis of the respiratory musculature. The frequency of oscillation is adjustable from 13 to 30 oscillations per minute. The amplitude of oscillation, which also is adjustable, can be made as great as 27 degrees, while the mean position can be either a positive or a negative angle; that is, the patient's head can be higher than his feet most of the time or lower than his feet most of the time.



Burns Rocking Bed, Model V-3

Crated for shipment, the bed measures 81 (height) by 198 by 96 cm. (32 by 78 by 38 in.) and weighs 136 kg. (300 lb.). The motor requires 60 cycle alternating current at 110 volts and draws 270 watts.

MEDICAL EDUCATION in the UNITED STATES and CANADA

FIFTY-FOURTH ANNUAL REPORT ON MEDICAL EDUCATION IN THE UNITED STATES AND CANADA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Edward L. Turner, M.D., Walter S. Wiggins, M.D., Douglas D. Vollan, M.D., and Anne Tipner

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Introduction

At the Baltimore meeting of the newly organized American Medical Association in May, 1848, the Association received a report from its Committee on Medical Education, appointed the previous year, comparing medical education in the United States at that time with its counterpart in Europe. The committee indicated that there had already been evidence of improved curricula in some of the American schools as a result of the establishment of the Committee on Education and its activities. Since that time the medical profession has received an annual report, at first from its Committee on Education, then from the Council on Medical Education established in 1904, and since 1921 from its Council on Medical Education and Hospitals. These reports to the A. M. A. gradually evolved into the annual published report on medical education in the United States and Canada. The current report is the 54th annual compilation prepared by the staff of the Council on Medical Education and Hospitals and covers the period from July 1, 1953, to June 30, 1954.

This report includes data derived from official sources concerning schools of medicine and matters of information pertinent to medical education. Such a compilation of data would not be possible without the cooperation of medical school administrative officials and others. Due appreciation is extended by the Council on Medical Education and Hospitals to the many persons who have provided the information on which the current report is based.

The significance of intercommunication in stimulating experimental advances in medical education has been highlighted during the past year by a number of important events. The first of these was the publication in the summer of 1953 of the results of the resurvey of medical schools under the title "Medical Education in the United States at Mid-Century." [1] The information in this volume presented a comprehensive summary of the current activities and functions of a medical school and included a study of the costs of educating a medical student. It clearly indicated the multitudinous and complex activities of many schools where strict determination of the cost of medical education is exceedingly difficult. Furthermore, the relationship between the cost of basic medical education and the indirect cost of research, together with general trends in medical school financing, has been presented in a manner that has been most useful in the effort to bring about a clearer delineation of the various facets of institutional financing. Conclusions and recommendations presented at the end of each major section of the volume have stimulated thoughtful discussion and further self-appraisal on the part of many medical schools.

Another factor was the publication of the companion volume to the mid-century medical school survey under the title "Preparation for Medical Education in the Liberal Arts College." [2] This report by the subcommittee on preprofessional education of the Survey of Medical Education presented a stimulating and challenging picture of value to both students and teachers. It was indicated that it is undesirable to distinguish the preprofessional student from other liberal arts students. The volume presents many facets of preprofessional education that aid in bridging the gap between general and specific educational institutions. It highlights the need for cooperative planning and mutual understanding on the part of preprofessional and professional faculties in achieving the breadth of background and knowledge desired in professional personnel.

The First World Conference on Medical Education, held in London, Aug. 22 to 29, 1953, under the auspices of the World Medical Association in collaboration with the World Health Organization, the Council for Inter-

1. Deitrick, J. E., and Berson, R. C.: Medical Schools in the United States at Mid-Century, New York, McGraw-Hill Book Company, Inc., 1953.

2. Severinghaus, A. E.; Carman, H. J., and Cadbury, W. E., Jr.: Preparation for Medical Education in the Liberal Arts College, New York, McGraw-Hill Book Company, Inc., 1953.

national Organizations of the Medical Sciences, and the International Association of Universities, was another of the intercommunication events of widespread importance. The general theme of the conference was undergraduate medical education. Over 600 registrants representing 62 countries participated. The material presented stimulated excellent thought-provoking discussions. It was of interest to observe that, regardless of the nation concerned, the basic qualities being sought in persons desiring to enter the medical profession are much the same the world over. The basic background and preparation of students for admission to the study of medicine has a fairly common denominator, while the methods, techniques, and actual needs in medical training itself vary greatly, depending upon the objectives being sought in various parts of the world to meet the specific medical and health needs of the different areas. The proceedings of this conference are to be published by the Oxford University Press.[3]

From the standpoint of medical education in the United States, one of the most significant and valuable developments in intercommunication in recent years was the first annual institute conducted by the Association of American Medical Colleges the week prior to the 64th Annual Meeting of the Association in Atlantic City during October, 1953. This first annual institute centered its attention on the fields of physiology, biochemistry, and pharmacology. Well over a year of careful preparation for the institute under highly competent leadership made it an outstanding experience for those who attended. It was a sound, sincere self-analysis on the part of leaders in these fields to evaluate the current teaching and to interchange concepts as well as project experimental ideas. The "Report of the Teaching Institute on Physiology, Biochemistry and Pharmacology"[4] has recently been released and merits widespread study. There has been gratifying indication that representatives of the various medical schools attending the institute succeeded in communicating their enthusiasm for similar exchanges and discussions on the local level as they returned to their respective schools. The Association of American Medical Colleges will conduct its second teaching institute centering attention on pathology, immunology, and genetics a week before its annual meeting at French Lick Springs, Ind., in October, 1954.

The Congress on Medical Education and Licensure held its sesquicentennial session, February 7 to 9, 1954. The chairman of the Council on Medical Education and Hospitals at that time summarized the 50 years of Council activity.[5] Problems of general current interest in the field of medical education and licensure were presented. A panel discussion was held on professional orientation in undergraduate medical education. A half day session was allocated to a report of the principal findings of the American Medical Association survey on postgraduate medical education, followed by a series of panels on: (1) the objectives of postgraduate medical education; (2) how to achieve these objectives; and (3) the facilities, faculty, and financial requirements of postgraduate programs.

Another important event was the publication of the eighth revision of the "Objectives of Undergraduate Medical Education"[6] emanating from the Association of American Medical Colleges. Although still a document under development and revision, it has stimulated much discussion and analytical evaluation. Since the objectives of undergraduate medical education are of such vital interest and importance in the development of the young physician preparing for the current and future practice of medicine, it is believed that they should be presented in this annual report on medical education so that they may be more widely read and analyzed by the medical profession and others. It will be apparent to the reader that the medical educators who have been developing this statement on objectives believe that the creation of sound attitudes and understanding of professional and ethical principles are basic responsibilities of medical education, just as are the acquisition of scientific knowledge, the development of essential professional habits, and the achievement of basic skills. It is furthermore clearly indicated that undergraduate medical education is an effort to create a foundation on which graduate experience and specialization may subsequently be developed. The following is a direct quotation of the "Objectives of Undergraduate Medical Education" as they have been presented in the eighth revision.

Undergraduate medical education must provide a solid foundation for the future physician's development. It should not aim at presenting the complete, detailed, systematic body of knowledge concerning each and every medical and related discipline. Rather, it must provide the setting in which the student can learn fundamental principles applicable to the whole body of medical knowledge, establish habits of reasoned and critical judgment of evidence and experience, and develop an ability to use these principles and judgments wisely in solving problems of health and disease.

Undergraduate medical education cannot achieve these aims if the student is relegated to a passive role. It must provide incentive for active learning on the part of the student. This can best be done by giving him definite responsibility in real day-to-day problems of health and disease. This responsibility must of course be carefully graded to the student's ability and experience and must be exercised under careful guidance by the faculty.

Given incentive to learn and guidance toward the grasp of principles, with the problems of health and disease as a frame of reference, the student will build the necessary foundation for his career in medicine, be it practice (general or limited), teaching, research or administration.

In working toward this fundamental objective, undergraduate medical schools must strive to help the student to acquire basic professional knowledge; establish essential habits; attain clinical and social skills necessary to the best utilization of that knowledge; and develop those basic intellectual attitudes and ethical or moral principles which are essential if he is to gain and maintain the confidence and trust of those whom he treats, the respect of those with whom he works and the support of the community in which he lives.

These aims are obviously not distinctly separable, but mutually interdependent. Altogether they summarize the desirable characteristics of the responsible professional person medical education is attempting to produce.

3. Proceedings of First World Conference on Medical Education, London, England, Oxford University Press, to be published.

4. Association of American Medical Colleges: Report of the First Teaching Institute on Physiology, Biochemistry, and Pharmacology, 1953, J. M. Educ. **29**: (July, pt. 2) 1954.

5. Weiskotten, H. G.: Fifty Years of Council Activity, report of the Council on Medical Education and Hospitals, J. A. M. A. **154**: 1200-1203 (April 3) 1954.

6. Association of American Medical Colleges: The Objectives of Undergraduate Medical Education: Eighth Revision, J. M. Educ. **28**: 57-59 (March) 1953.

With the aims indicated above as a basis for specification, the more detailed objectives of undergraduate medical education have then been outlined.[6]

Medical Schools

APPROVED MEDICAL SCHOOLS

With the approval of the programs of the University of North Carolina and the University of Puerto Rico there are now 74 fully approved four year medical schools and six approved schools of the basic medical sciences in the United States (table 1). Approval of the program of the University of British Columbia Faculty of Medicine has increased the number of approved medical schools in Canada to 11, with 1 approved school of basic medical sciences (table 2).

Data in these tables include years of premedical training required for admission in the 1955 class, the number of students enrolled in each class during the 1953-1954 academic year, the number of part-time or special students working toward M.D. degrees, and the number of students graduated during the period from July 1, 1953, to June 30, 1954. Data for the Canadian schools include, in addition, enrollment of students in the first and second premedical years, students enrolled in a fifth medical year, and those in a required intern year, where indicated. A more detailed discussion of this material appears in other sections of this report.

The name of the current dean or executive officer is listed in the final column. Since publication of the last report, changes of chief administrative personnel have been made in 10 of the 92 medical and basic science schools of the United States and Canada. New executive officers have been appointed by the University of California at San Francisco, the Medical College of Georgia, University of Illinois, Washington University, Cornell, State University of New York at New York City, Rochester, Southwestern, the University of Washington, and Dalhousie University.

MEDICAL SCHOOLS IN DEVELOPMENT

The University of California at Los Angeles will admit its fourth class in 1954 and will be eligible for consideration for approval as a four year medical school. The development of this institution's program has been followed closely by the Council, but, in accordance with long standing policy, approval is not granted to any medical school developing a four year program until representatives of the Council survey it after instruction has been instituted in all four years of the medical course. In order to clarify the eligibility for internship appointments of the first University of California at Los Angeles senior group, the following action has been adopted by the Council:

> Students who will graduate from the School of Medicine of the University of California at Los Angeles in 1955 will be considered as if they had graduated from an approved medical school. Hospitals approved for intern training will not lose their approval if they accept these students for internship.

The University of Mississippi is completing the construction program of its new hospital and medical school building at Jackson. It is anticipated that the first regular third year class will be registered in the fall of 1955, although a small third year group may be enrolled in January, 1955, if developments make that possible. The faculty for the clinical years is now being organized. The University of Miami School of Medicine will admit its third year class in 1954 and plans to have all four years in operation by the fall of 1955. Currently, the faculty and the curriculum for the clinical years are being developed.

The legislature of Missouri has appropriated $13,500,000 for the building program now underway at the University of Missouri; 9 million dollars of this is for hospital construction, $3,100,000 for a medical science building, and the remainder for a steam plant, laundry, and nurses' home. The 441 bed hospital is currently under construction, and excavation for the medical science building is underway. It is hoped that the developmental program will permit the 1953-1954 entering class to continue on into its third year of training at the University of Missouri.

Last March the Albert Einstein College of Medicine of Yeshiva University reported that excavation was far advanced for the foundation of their new College of Medicine. They anticipate that progress on construction will be sufficiently rapid to permit admission of a first year class in 1955. A number of initial key faculty appointments have been made. A section of the teaching hospital center was scheduled for opening July 1, 1954, the service buildings for the center and the 511 bed Nathan B. Van Etten hospital are completed and the Abraham Jacobi Hospital Unit is scheduled for completion Jan. 1, 1955.

The University of Florida at Gainesville has received a 5 million dollar appropriation from the 1953 legislature to develop the medical science building that will constitute the first unit of the College of Medicine. Their schedule called for initial contract awards for building foundations during the spring of 1954. The dean has been appointed and according to current planning the school will admit its first class in 1956. At West Virginia University planning for their new medical center continues. The heating plant is currently under construction, but no definite date has yet been advanced for registration of the first third year class. In North Dakota the legislature has directed that the School of Medicine admit a third year class by 1955 and that a full four year program be in operation by 1956.

On Aug. 11, 1954, an announcement was made to the people of New Jersey that a corporation has been formed within the state to be known as the "Seton Hall College of Medicine and Dentistry." Correspondence from the college indicates that this is the initial step in the formation of a program of study in medicine and dentistry to be conducted in the Jersey City Medical Center. They express the hope that the new college will be ready to accept students for the fall of 1955.

The University of Kentucky's board of trustees on June 1, 1954, formally sanctioned the establishment of a medical school in Lexington to cost about 25 million dollars. The university will request funds for the project from the Kentucky General Assembly. Last March, the Kentucky Medical Sciences Development Foundation was formed to promote interest in the project and to

TABLE 1.—*Approved Medical Schools and Schools of the Basic Medical Sciences in the United States*

		Four Year Medical Schools	1955 Premedical Requirement by Years	Students by Classes, 1953-1954: Freshman	Sophomore	Junior	Senior	Total	Part-Time, Special, and Irregular Students	Graduates July 1, 1953, to June 30, 1954	Executive Officer	
Ala.	1	Medical College of Alabama, Birmingham	3	80	74	80	61	295	3	61	James J. Durrett, M.D., Dean	1
Ark.	2	University of Arkansas School of Medicine, Little Rock	3	92	70	84	72	318	3	72	Hayden C. Nicholson, M.D., Dean	2
Calif.	3	College of Medical Evangelists, Loma Linda-Los Angeles	3	95	87	90	93	365	4	92	Harold Shryock, M.D., Dean	3
	4	University of Southern California School of Medicine, Los Angeles	3	68	66	70	69	273	..	141‡	Gordon E. Goodhart, M.D., Dean	4
	5	Stanford University School of Medicine, Stanford-San Francisco	3	58	62	60	57	237	..	64	Windsor Cooper Cutting, M.D., Dean	5
	6	University of California School of Medicine, San Francisco	3	76	76	81	76	309	..	74	John B. Lagen, M.D., Assoc. Dean	6
Colo.	7	University of Colorado School of Medicine, Denver	3	82	67	77	79	305	1	81	Robert C. Lewis, Ph.D., Dean	7
Conn.	8	Yale University School of Medicine, New Haven	3	79	78	82	64	303	..	63	Vernon Lippard, M.D., Dean	8
D. C.	9	Georgetown University School of Medicine, Washington	4*	120	113	114	108	455	..	107	Francis M. Forster, M.D., Dean	9
	10	George Washington University School of Medicine, Washington	3	100	90	82	78	350	..	78	Walter A. Bloedorn, M.D., Dean	10
	11	Howard University College of Medicine, Washington	4	79	75	75	70	299	..	69	Joseph L. Johnson, M.D., Dean	11
Ga.	12	Emory University School of Medicine, Atlanta	3	72	73	70	70	285	..	70	Richard Hugh Wood, M.D., Dean	12
	13	Medical College of Georgia, Augusta	3	79	76	76	73	304	9	73	Harry B. O'Rear, M.D., Dean	13
Ill.	14	Chicago Medical School, Chicago	4	72	75	64	69	280	..	137‡	John J. Sheinin, M.D., President	14
	15	Northwestern University Medical School, Chicago	3	131	129	137	136	533	2	136	Richard H. Young, M.D., Dean	15
	16	Stritch School of Medicine of Loyola University, Chicago	3	88	84	80	84	336	..	83	John F. Sheehan, M.D., Dean	16
	17	University of Chicago, the School of Medicine, Chicago	3	72	71	68	69	280	3	69	Lowell T. Coggeshall, M.D., Dean of Division of Biological Sciences	17
	18	University of Illinois College of Medicine, Chicago	3	167	159	172	169	667	..	169	Granville A. Bennett, M.D., Dean	18
Ind.	19	Indiana University School of Medicine, Bloomington-Indianapolis	3	151	153	133	138	575	3	139	John D. Van Nuys, M.D., Dean	19
Iowa	20	State University of Iowa College of Medicine, Iowa City	3	119	114	109	116	458	2	116	Norman B. Nelson, M.D., Dean	20
Kan.	21	University of Kansas School of Medicine, Lawrence-Kansas City	3	111	117	123	105	456	3	105	W. Clark Wescoe, M.D., Dean	21
Ky.	22	University of Louisville School of Medicine, Louisville	3	100	96	93	92	381	..	92	J. Murray Kinsman, M.D., Dean	22
La.	23	Louisiana State University School of Medicine, New Orleans	3	125	96	119	108	448	4	107	William W. Frye, M.D., Dean	23
	24	Tulane University of Louisiana School of Medicine, New Orleans	3	135	121	132	128	516	..	128	M. E. Lapham, M.D., Dean	24
Md.	25	Johns Hopkins University School of Medicine, Baltimore	Degree	75	69	73	77	294	..	77	Philip Bard, Ph.D., Dean	25
	26	University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore	3	104	102	101	97	404	..	96	H. Boyd Wylie, M.D., Dean	26
Mass.	27	Boston University School of Medicine, Boston	3	72	72	79	65	288	..	66	James M. Faulkner, M.D., Dean	27
	28	Harvard Medical School, Boston	2	115	120	148	148	531	..	148	George Packer Berry, M.D., Dean	28
	29	Tufts College Medical School, Boston	Degree	117	112	112	108	449	..	110	Joseph M. Hayman, Jr., M.D., Dean	29
Mich.	30	University of Michigan Medical School, Ann Arbor	3	204	191	178	155	728	..	155	A. C. Furstenberg, M.D., Dean	30
	31	Wayne University College of Medicine, Detroit	3	75	67	70	65	277	1	65	Gordon H. Scott, Ph.D., Dean	31
Minn.	32	University of Minnesota Medical School, Minneapolis	3	127	115	118	130	490	..	133	Harold S. Diehl, M.D., Dean of Medical Sciences	32
Mo.	33	St. Louis University School of Medicine, St. Louis	3	123	117	121	130	491	8	132	James W. Colbert, Jr., M.D., Dean	33
	34	Washington University School of Medicine, St. Louis	3	86	85	99	96	366	..	96	Carl V. Moore, M.D., Dean	34
Neb.	35	Creighton University School of Medicine, Omaha	3	76	76	78	70	300	2	70	F. G. Gillick, M.D., Dean	35
	36	University of Nebraska College of Medicine, Omaha	3	86	81	84	93	344	..	92	James P. Tollman, M.D., Dean	36
N. Y.	37	Albany Medical College, Albany	3	59	49	52	52	212	..	53	Harold C. Wiggers, Ph.D., Dean	37
	38	University of Buffalo School of Medicine, Buffalo	4	71	67	71	70	279	..	70	Stockton Kimball, M.D., Dean	38
	39	Columbia University College of Physicians and Surgeons, New York	3	120	121	113	111	465	..	111	Willard C. Rappleye, M.D., Dean	39
	40	Cornell University Medical College, New York	Degree	84	84	86	83	337	..	83	E. Hugh Luckey, M.D., Dean	40

	41	New York Medical College, Flower and Fifth Avenue Hospitals, New York	4	128	119	119	112	478	..	112	Ralph E. Snyder, M.D., Exec. Dean	41
	42	New York University College of Medicine, New York	3	130	145	133	122	530	..	121	Currier McEwen, M.D., Dean	42
	43	State University of New York College of Medicine, New York City	3	150	148	143	132	573	1	131	Howard Potter, M.D., Acting Dean	43
	44	State University of New York College of Medicine, Syracuse	3	76	72	70	67	285	..	66	William R. Willard, M.D., Dean	44
	45	University of Rochester School of Medicine and Dentistry, Rochester	3	71	70	69	70	280	1	69	Donald G. Anderson, M.D., Dean	45
N. C.	46	Duke University School of Medicine, Durham	3	79	76	79	82	316	1	80	Wilburt C. Davison, M.D., Dean	46
	47	Bowman Gray School of Medicine of Wake Forest College, Winston-Salem	3	54	45	50	51	200	2	50	C. C. Carpenter, M.D., Dean	47
	48	University of North Carolina School of Medicine, Chapel Hill	3	60	59	59	48	226	1	48	W. Reece Berryhill, M.D., Dean	48
Ohio	49	University of Cincinnati College of Medicine, Cincinnati	3	90	84	88	90	352	..	89	Stanley E. Dorst, M.D., Dean	49
	50	Western Reserve University School of Medicine, Cleveland	3	81	82	87	85	335	2	85	Joseph T. Wearn, M.D., Dean	50
	51	Ohio State University College of Medicine, Columbus	3	150	150	136	139	575	..	136	Charles A. Doan, M.D., Dean	51
Okla.	52	University of Oklahoma School of Medicine, Oklahoma City	3	100	99	99	82	380	..	81	Mark R. Everett, Ph.D., Dean	52
Ore.	53	University of Oregon Medical School, Portland	3	75	73	67	52	267	21	56	D. W. E. Baird, M.D., Dean	53
Pa.	54	Hahnemann Medical College and Hospital of Philadelphia	3	105	97	92	99	393	..	99	Charles L. Brown, M.D., Dean	54
	55	Jefferson Medical College of Philadelphia	3	171	163	169	163	666	..	163	George Allen Bennett, M.D., Dean	55
	56	Temple University School of Medicine, Philadelphia	3	131	128	125	132	516	1	132	William N. Parkinson, M.D., Vice President and Dean	56
	57	University of Pennsylvania School of Medicine, Philadelphia	3	127	117	131	127	502	..	127	John McK. Mitchell, M.D., Dean	57
	58	Woman's Medical College of Pennsylvania, Philadelphia	4†	51	46	41	43	181	..	43	Marion Fay, Ph.D., Dean	58
	59	University of Pittsburgh School of Medicine, Pittsburgh	3	100	89	94	98	381	4	98	William S. McElroy, M.D., Dean	59
S. C.	60	Medical College of South Carolina, Charleston	3	80	72	68	55	275	..	55	John T. Cuttino, M.D., Dean	60
Tenn.	61	University of Tennessee College of Medicine, Memphis	3	219	183	189	159	750	..	159	O. W. Hyman, Ph.D., Vice President and Dean	61
	62	Meharry Medical College, Nashville	3	65	62	67	63	257	3	63	Daniel T. Rolfe, M.D., Dean	62
	63	Vanderbilt University School of Medicine, Nashville	3	53	50	48	55	206	..	54	John B. Youmans, M.D., Dean	63
Texas	64	Southwestern Medical School of the University of Texas, Dallas	3	100	93	102	99	394	5	98	A. J. Gill, M.D., Asst. Dean	64
	65	University of Texas School of Medicine, Galveston	3	161	154	150	134	599	11	132	Chauncey D. Leake, Ph.D., Exec. Director	65
	66	Baylor University College of Medicine, Houston	3	93	86	93	86	358	1	86	Stanley Olson, M.D., Dean	66
Utah	67	University of Utah School of Medicine, Salt Lake City	3	54	46	53	45	198	5	45	John Z. Bowers, M.D., Dean	67
Vt.	68	University of Vermont College of Medicine, Burlington	3	51	47	48	43	189	1	43	George A. Wolf, M.D., Dean	68
Va.	69	University of Virginia School of Medicine, Charlottesville	3	76	76	68	72	292	..	70	Thomas Harrison Hunter, M.D., Dean	69
	70	Medical College of Virginia, Richmond	3	84	83	105	100	372	..	100	John B. Truslow, M.D., Dean	70
Wash.	71	University of Washington School of Medicine, Seattle	3	75	74	70	68	287	1	68	George N. Aagaard, M.D., Dean	71
Wis.	72	University of Wisconsin Medical School, Madison	3	87	79	73	79	318	6	79	William S. Middleton, M.D., Dean	72
	73	Marquette University School of Medicine, Milwaukee	3	101	95	99	96	391	5	95	John S. Hirschboeck, M.D., Dean	73
P. R.	74	University of Puerto Rico School of Medicine, San Juan	3	50	44	45	45	184	1	45	E. Harold Hinman, M.D., Dean	74
		Totals		7,223	6,856	6,983	6,727	27,789	121	6,861		
		Schools of Basic Medical Sciences										
Miss.	1	University of Mississippi School of Medicine, University	3	57	56	..	..	113	5	...	David S. Pankratz, M.D., Dean	1
Mo.	2	University of Missouri School of Medicine, Columbia	3	44	41	..	..	85	..	...	Roscoe L. Pullen, M.D., Dean	2
N. H.	3	Dartmouth Medical School, Hanover	3	24	22	..	..	46	1	...	Rolf C. Syvertsen, M.D., Dean	3
N. D.	4	University of North Dakota School of Medicine, Grand Forks	3	38	32	..	..	70	5	...	Theodore H. Harwood, M.D., Dean	4
S. D.	5	University of South Dakota School of Medical Sciences, Vermillion	3	31	32	..	..	63	1	...	W. L. Hard, Ph.D., Dean	5
W. Va.	6	West Virginia University School of Medicine, Morgantown	3	32	29	..	..	61	..	...	Edward J. Van Liere, M.D., Dean	6
		Totals		226	212			438	12			
		Grand Total (Four Year Schools and Schools of Basic Medical Sciences)		7,449	7,068			28,227	133			

* Veterans, 90 semester hours.
† In special cases 3 years.
‡ Figures represent two classes. Intern year requirement discontinued.

receive funds from private sources, with its immediate objective being to file articles of incorporation and formulate building plans tentatively for July 1, 1955.

It is of interest to indicate that if all of the projects described above are carried through to satisfactory completion that potentially 10 four year medical schools may be added to the list of four year medical schools during the period of the next five to six years. In addition, during the course of the past year correspondence has come to the attention of the Council staff indicating that serious consideration is being given to the possible development of three other new medical schools in the United States.

TABLE 2.—*Approved Medical Schools and Approved School of the Basic Medical Sciences in Canada*

		Medical Schools	1955 Premedical Requirement by Years	Students by Classes, 1953-1954: First Premedical Year*	Second Premedical Year*	Freshman	Sophomore	Junior	Senior	Additional Year	Required Intern Year*	Totals*	Graduates July, 1953, to June 30, 1954		
Alta.	1	University of Alberta Faculty of Medicine, Edmonton	3	...	...	58	56	58	64	..	..	236	61	John W. Scott, M.D., Dean	1
B. C.	2	University of British Columbia School of Medicine, Vancouver	3	...	...	60	58	58	57	..	..	233	54	Myron M. Weaver, M.D., Dean	2
Man.	3	University of Manitoba Faculty of Medicine, Winnipeg	3	...	...	61	64	65	77	..	61	267	58	Lennox G. Bell, M.D., Dean	3
N. S.	4	Dalhousie University Faculty of Medicine, Halifax	3	...	...	58	53	52	49	..	54	212	53	C. B. Stewart, M.B., Dean	4
Ont.	5	Queen's University Faculty of Medicine, Kingston	2	64	...	59	60	64	59	53	..	295	53	G. Harold Ettinger, M.D., Dean	5
	6	University of Ottawa Faculty of Medicine, Ottawa	3	44	...	64	46	48	46	..	45	204	47	A. L. Richard, M.D., Dean	6
	7	University of Western Ontario Faculty of Medicine, London	2	...	...	60	57	60	60	..	..	237	61	J. B. Collip, M.D., Dean	7
	8	University of Toronto Faculty of Medicine, Toronto	2	128	118	150	150	145	160	..	..	605	166	J. A. MacFarlane, M.B., Dean	8
Que.	9	McGill University Faculty of Medicine, Montreal	3	...	...	113	103	114	110	..	..	440	110	G. Lyman Duff, M.D., Dean	9
	10	University of Montreal Faculty of Medicine, Montreal	Degree	...	...	126	103	95	99	..	96	423	99	Wilbrod Bonin, M.D., Dean	10
	11	Laval University Faculty of Medicine, Quebec	Degree	120	...	140	119	85	135	..	135	479	134	Charles Vezina, M.D., Dean	11
		Totals		356	118	949	869	844	916	53	391	3,631	896		
		School of Basic Medical Sciences													
Sask.	1	University of Saskatchewan School of Medical Sciences, Saskatoon	2	...	...	33	32	..	..	..	..	65	..	J. Wendell Macleod, M.D., Dean	1
		Grand Total (Four year schools and Saskatchewan)		...	...	982	901	844	916	53	..	3,696	..		

* Intern and premedical enrollment not included in total column.

DEVELOPMENTS OF MAJOR IMPORTANCE IN MEDICAL SCHOOLS

Analysis of the annual reports of medical schools submitted to the Council on Medical Education and Hospitals for the academic year 1953-1954 affords confirmation of the intellectual ferment constantly underway in these professional schools in the efforts of medical faculties to improve educational opportunities for medical students. Curriculum study and reorganization is being actively conducted in many schools. Curriculum changes being instituted include correlation and improved integration of basic science departmental activities, overcoming departmental isolationism, better correlation of basic medical science instruction with clinical teaching, reorganization of outpatient teaching so as to afford continuity of student-patient experience, reduction of didactic instruction in both basic medical sciences and clinical fields, incorporation of minor specialty instruction into broader experiences in major clinical areas, improved supervision of preceptorship opportunities, and readjustments of time schedules through adoption of a quarter system in the clinical years or modifying the length of the academic year.

Reorganization of certain parts of basic medical science teaching is now either accomplished or underway at Alabama, Emory, Indiana, Creighton, Albany, Western Reserve, Oregon, Temple, South Carolina, Baylor, Marquette, Utah, and the University of Washington. At Alabama better integration of basic medical sciences and clinical sciences is being developed. Emory has consolidated its basic medical science departments of anatomy, biochemistry, physiology, pharmacology, and bacteriology as university departments under a director of basic medical sciences. Indiana has developed more closely integrated teaching in biochemistry, microbiology, and pathology; and Creighton has established a course in infectious diseases correlating medicine, microbiology, preventive medicine, and public health. Creighton also has correlated medicine, pathology, microbiology, biochemistry, and microanatomy in its teaching of laboratory diagnosis. During recent years this correlated and

cooperative approach to the teaching of laboratory diagnosis has been developed in several medical schools.

Baylor has instituted a program of concurrent teaching of anatomy, physiology, and biochemistry throughout the first year. No examinations are conducted during a given quarter, but comprehensive examinations are conducted at the end of each of the three academic quarters. The school reports gratifying results as measured in terms of student interest, quality of work, and improvement in the degree of maturity and responsibility exhibited by students. The effect of the frequent competitive quizzing with the psychological pressures inadvertently created by different departments on student interest, maturity, quality of work, and responsibility is a matter worthy of more serious consideration by all medical faculties in scrutinizing their methods of student evaluation.

Vermont has instituted radical changes in its first year program correlating physiology with anatomy and biochemistry. Departmental identity has been retained, but the material taught by these departments is related at any given time. At Marquette, teaching in pathology and bacteriology has been carefully correlated. Thus the trend to reduce rigid departmental "pigeon holing" and to utilize departments as cooperative factors in administrative convenience seems to be well established in many institutions.

On the other hand, in keeping with the need for proper balance of responsibility, Albany has separated physiology and pharmacology into two separate departments, and New York Medical College reports a similar development. At the University of Chicago, radiology, which has been a division of medicine, has been established as a separate department. Maryland has established a new department of preventive medicine and rehabilitation. Albany has separated anesthesiology from surgery as a new department.

In line with the increasing emphasis on the simultaneous multidisciplinary approach to the teaching of clinical fields from the concept of man in his total environment, many interesting experimental programs are being conducted. For instance, at Boston University, through a program made possible by a Commonwealth Fund grant, the departments of obstetrics, pediatrics, psychiatry, and preventive medicine sponsor a home study service. One-third of the senior class is assigned to this service for a period of four months during which each student has an opportunity to observe patients over longer periods of time and in outpatient, ward, and home environments. At Louisville, a Kellogg Foundation grant has made possible the establishment of an elective program called the "Family Health Program," which begins in the third year. Student volunteers are assigned to selected families as student family physicians closely supervised by a team of instructors representing the various clinical specialties. Albany has introduced a family health care program and continues its general practice preceptorship program, both of which have proven such satisfactory experiences that they are being continued and expanded.

Vanderbilt has instituted a program of social and environmental medicine requiring regular visits in the homes of patients. The student acts as a family health advisor among selected families and continues his contact throughout his entire undergraduate four years. This program is designed to aid the student in learning the human aspects of illness as he observes the patient as a person, a member of the family unit, and of society and helps to create an early understanding of the principle and meaning of the physician-patient relationship and its significance in diagnosis and treatment.

Western Reserve has completed the second year of pioneer experimentation in radical curriculum revision that is being scrutinized with interest by medical educators both here and abroad. They find as a part of their curriculum study that there is room for great improvement in the care of ambulatory patients, and that this aspect of medical care assumes even greater importance in undergraduate teaching in view of the fact that new drugs make is possible to treat many persons in the outpatient department who were formerly admitted to ward beds. Although similar observations have been widespread, adequate readjustments to the changed teaching value of the outpatient aspect of medical care are in general lagging. It is the outpatient clinic in which the physician can best organize the group concerned with the care of the patient, including medical specialists, the nurse, the social worker, and all others who contribute to medical care, into a unified team. Because of the amazingly rapid changes in medicine emanating from the research accomplishments of recent years, medical care, of necessity, must always remain fluid so as to take advantage of these new developments without delay. Since the whole problem of medical care is inextricably interwoven with teaching medical students, interns, residents, and physicians, medical schools are challenged constantly to insure the most exemplary care in their teaching hospitals and clinics, for the finest of medical care is the core of good clinical teaching.

The rapid increase in the number and importance of medical specialties during recent years has posed difficult problems in teaching schedules, particularly in the outpatient clinic. In many outpatient departments students have been assigned to a few weeks on medicine, similar periods on surgery, pediatrics, and obstetrics and gynecology. Then in rapid succession assignments carry the student through such specialties as dermatology, neurology, psychiatry, ophthalmology, orthopedics, urology, and so on. Such a kaleidoscopic experience has lacked continuity of patient care throughout even a single illness and makes it difficult to develop the sense of responsibility for the patient as a person, which is one of the major objectives in medical education.

A number of medical schools are, therefore, reorganizing outpatient clinic instruction in a variety of ways so that the student is assigned to patients rather than specific clinics in order to provide this continuity of patient study. At the University of Pennsylvania, for instance, the student works day by day on some given service, such as medicine or surgery, but this is merely for the purpose of maintaining a proper balance in his experience and for the assignment of new patients. Once the patient and his student-physician have made their first contact, the student carries that patient throughout the full cycle of his illness regardless of what special diagnostic procedure or treatment may be required.

A similar system has been in operation since 1952 at the University of Oklahoma,[7] where students are assigned concurrently to all departments in the outpatient clinics and may follow their patients completely without losing the advantage of the "follow through" as they did in the traditional block system of assignment. Cornell has conducted a somewhat similar plan for several years. Wherever this type of program has been carefully instituted and well supervised, faculties are convinced that it is basically sound teaching, and there is evidence that the outpatient experience is far more satisfactory than the more traditional block type of clinic assignment.

During recent years some medical educators have voiced concern over the belief that the fourth year in some medical schools did not seem to offer the same challenging experience to the medical student as has been presented during the first three years. However, with these newer approaches to outpatient clinic teaching, the development of home care and hospital extension programs, preceptorships, additional elective clinic assignments, and elective research opportunities, the fourth year of medicine would appear to be assuming its potentially rightful place as the richest and most challenging one in undergraduate experience.

TABLE 3.—*Recapitulation of Estimated Funds Available to Medical Schools, 1954-1955*

(Funds for construction and operation of major clinical facilities not included.)

Category	Amounts
Budgeted funds and appropriations	$ 93,408,312
Funds for miscellaneous projects	4,978,812
Research grants from outside agencies	43,383,666
Teaching grants from outside agencies	6,874,411
Total	$148,645,201

As a note of caution in the development of these potentially valuable programs, it is important to indicate certain problems that may be associated with them. One of the first and most important obligations in undergraduate medical education is adequate supervision of the medical student. Family health care, hospital extension programs, preceptorships, and outpatient activities will be genuinely valuable experiences for the medical student only if planned with exceeding care and if they include all of the prerequisites of a true learning situation. While the potentialities are outstanding, it should be an objective to place the student in his true situation as a learner. He should be subjected to typical as well as to atypical problems. He should be under the supervision of persons who, through precept and example, aid him in developing the attitudes as well as the knowledge requisite in good medical care. Each school undertaking such experimental programs has a real responsibility in recognizing and fully appreciating the hazards as well as the advantages that may accompany them. Through careful planning, adequate selection of personnel, close supervision, and repeated evaluation every possible effort should be made to insure that the potential hazards are minimized and the advantages fully realized.

Albany Medical College reports that arrangements have been made with their teaching hospital to the effect that the hospital now aids in providing financial support for part of the school's clinical department budgets. This arrangement is based on recognition of the fact that the excellence of medical care is directly related to the activities of the medical college personnel who in turn attract highly competent house staff with resultant over-all benefit to the hospital and its patients. Both the University of Southern California and the College of Medical Evangelists receive substantial appropriations from the Los Angeles County Hospital in recognition of the professional services furnished through the activities of their clinical faculties in the supervision and care of patients associated with their teaching duties.

Medical education has also been enhanced by the completion of, or initiation of, new physical facilities and remodeling of older buildings. During the past year, medical schools report completed capital construction for basic medical sciences totaling $27,384,000. In this same period, $38,686,400 is reported for the initiation of basic medical science facility construction. Completed construction of hospital facilities in connection with medical schools for the 1953-1954 period totals $31,099,574 and during the same period construction of hospital facilities has been initiated totaling $65,197,446. The schools also report that $1,226,000 was expended in newly completed medical student dormitory construction and that $6,130,000 is being expended on dormitory construction now underway.

Although there are many other experiments and developments taking place in this field, those described illustrate the most interesting and significant trends in undergraduate medical education.

MEDICAL SCHOOL FINANCING AND ESTIMATED FINANCIAL SUPPORT

For the past several years the annual report of the Council on Medical Education and Hospitals has presented data on the financial support of medical schools. This information is based on the projected budgets of the medical schools for the next year so that estimates presented in the following material represent 1954-1955 budget figures. The questionnaire requested: (1) projected budgets exclusive of hospital or outpatient department costs, (2) grants for research, or (3) grants for teaching from outside agencies, and (4) special projects involving major expenditures not included in any of the above categories. Funds involved in the items excluded from the basic operating budget are separately listed in the final grand total (table 3).

Because of the many variables involved in determining medical school financing it is not possible to state with certainty that all schools have interpreted their data in the same manner. It is obviously difficult to divorce some aspects of medical service from teaching, because in the clinical fields, in particular, they become inextricably interwoven. Furthermore, it is difficult to fully present true comparative budgets between medical schools because of the very nature of their differences in organization, differences in basic teaching and research activities, differences in their facilities, differences in the relationship of the schools with their teaching hospitals, and the variable methods utilized in financing faculty members teaching in the clinical departments.

7. Bird, R. M., and Wolf, S.: Teaching Internal Medicine at University of Oklahoma School of Medicine: A Program for Undergraduates, J. A. M. A. **154**: 408-411 (Jan. 30) 1954.

One example of this latter problem is illustrated in the report of a school with a relatively low estimated budget, just under $500,000. In this institution tuition income is equal to approximately three-quarters of the total budget income. However, the budget of this school is largely restricted to financing its administrative functions and its basic medical science departments with almost the entire cost of teaching in the clinical fields being carried by the affiliated teaching hospital through the full-time staff that it supports. This school, therefore, does not present any data in its budget covering monetary value of the service rendered to its undergraduate teaching program by its faculty in the clinical departments. Its clinical departmental personnel conduct a very active research program that receives support from outside grants that actually exceed the total estimated budget covering primarily its administrative and basic medical science programs. If the budget of this school were to be made strictly comparable to that of the average medical school that supports both basic medical science and clinical departments it would be necessary to add the evaluation of the salaries paid by the affiliated teaching hospital to its faculty members in clinical departments. In this particular instance such a readjustment would almost double the basic budget estimate of the school. While this represents only one of the difficult problems associated with comparative analysis of medical school budgets it does, however, aid in a better understanding of why this school reports a "cost per student" factor considerably lower than the average presented by schools where all of the cost factors in education are adequately and accurately included. At the other extreme, it would appear that an excessively high "cost per student" in an institution might represent the inclusion in the budget of factors that on close scrutiny should be chargeable to research or special activities other than that of medical education per se.

For the academic year 1954-1955, the basic budgets of all of the medical schools in the United States total $93,408,312. On the basis of classification of schools according to the nature of their ownership, 41 private schools have budgets totaling $46,180,088, 36 state-owned schools have budgets of $44,186,508, and 3 municipally owned schools account for $3,041,716. This is the eighth successive year in which the medical schools report a major increase in available operating funds, the current total representing an increase of $5,999,312. Part of the increase is accounted for by the addition of one newly approved four year school with a budget of $880,000. This sum should be subtracted from the total increase to make possible comparison with the figures representing the increase in 1953-1954.

Although the basic budgets of medical schools for 1954-1955 represent an increase of $5,999,312 over that of 1953-1954, it is to be noted that 21 schools report budget decreases totaling $2,672,217. Ten of the institutions reporting decreased budgets are privately owned, 10 state owned, and one is a municipal medical school. The total of $93,408,312 represents basic operating costs and does not include research grants or special teaching grants obtained from outside agencies. Neither does it include any significant portion of the cost of operating the teaching hospitals either owned or affiliated with medical schools. However, $3,016,894 of the total represents expenditures for the operation of certain activities in teaching hospitals such as salaries of professional and technical personnel and special laboratory, clinic, or dispensary programs.

On the basis of data available it is not possible to determine accurately the substantial financial contribution that a number of teaching hospitals render to the educational programs of their affiliated medical schools. Furthermore, it is not possible to estimate the value of instructional services contributed by large numbers of volunteer, unpaid members of the teaching faculties of medical schools.

Thirty-eight schools report 1954-1955 budgets of over a million dollars, three being over 3 million and eight others over 2 million dollars. Six of the four year schools report budgets of less than $500,000 with one such school having a budget of less than $400,000.

Estimated tuition fees for 1954-1955 will approximate $18,182,000, or 19.5% of the budget. This represents a relative decrease of income in proportion to the total budget as last year tuition accounted for 20.6% and in 1952-1953 for 21.5% of the anticipated income. As is well known, tuition fees vary widely from a very low level in some of the state schools, in which they represent an almost insignificant part of the available budget funds, to the position of representing three-quarters of the anticipated budget in one of the private institutions. There are six medical schools in which anticipated tuition income accounts for over one-half of the total projected budget.

Without exception all of the 80 medical schools have listed research grants from outside agencies in their 1954-1955 budgets. These are estimated to vary from $11,000 in one institution to over $2,500,000 in one of the most active research institutions. Thirteen schools anticipate such funds in excess of a million dollars and 18 others in excess of $500,000. The total amount anticipated from research grants from outside agencies to medical schools in 1954-1955 is $43,383,666. Since past experience has indicated that the anticipated total is usually substantially less than the amount received before the end of the year it is probable that the final figure will exceed the amount indicated above.

The anticipated 1954-1955 budgets also indicate that all medical schools will receive teaching grants from outside sources varying from a low of $10,000 to a high of $246,405. The total amount listed in this category represents $6,874,411. Again, it is probable that this total will be augmented during the course of the year. In addition to regularly budgeted funds, research and teaching grants from outside sources, a number of institutions report funds for major expenses in the development of miscellaneous projects not otherwise included that total $4,978,812. Table 3 is a recapitulation of the estimated funds available to medical schools for 1954-1955. As indicated previously this table does not include funds for construction or operation of major clinical facilities.

Comparison of the total of $148,645,201 estimate of funds available to medical schools for 1954-1955 with the estimate for 1953-1954 indicates an augmentation of

$16,336,201. As has been indicated in previous annual reports, it is important to understand that the total of $148,645,201 shown in the table will support a wide spectrum of research and service as well as undergraduate medical education. All schools of medicine today carry responsibilities for the teaching of other students in addition to medical students. Furthermore, the constant search for new knowledge emanating from active research is a well-established function and an essential part of the activity of a modern medical school.

In spite of augmented funds available to medical schools these institutions continue to face difficult and perplexing problems. Faculty salaries in many instances have not kept pace with higher costs of living. This has perhaps been more of a problem in the basic medical science fields than in some of the clinical areas, though some schools indicate that their clinical staff personnel in certain categories are seriously underpaid. Undoubtedly, this has played a role in the increasing difficulty in recruitment of able young faculty, particularly in the basic medical sciences. However, it is true that recent developments in the clinical fields have attracted more and more young scientists into the applied aspect of basic medical sciences. This has created a new competitive factor in recruitment from the standpoint of the basic medical science departments themselves. In some institutions this poses an increasingly difficult problem and should be given serious consideration. It is possible that improved interdepartmental cooperation among basic medical sciences and certain clinical fields might materially strengthen both areas and reduce the currently existing competition for highly qualified basic medical science personnel, thereby enhancing recruitment of such persons in the basic medical science departments.

As has been indicated in the section on major developments in medical schools, it is estimated that about $110,013,846 is budgeted for capital expenditures at the present time for construction and equipment of basic medical science, hospital and clinic, dormitory, and other facilities. During the past year projects of this nature totalling $64,115,574 were completed. In their overall estimates of needs, medical schools indicate that large sums are still needed for construction of new buildings, remodeling and modernization of existing facilities, and the purchase and installment of new permanent equipment. There has been marked and steady improvement toward the solution of these problems during recent years; however, the adequate maintenance of currently existing and newly developing medical schools, together with the constant demand for the application of new knowledge and techniques in the interest of ever better medical care for the American public, implies a continuing need for augmented financing of medical education and research.

NATIONAL FUND FOR MEDICAL EDUCATION AND AMERICAN MEDICAL EDUCATION FOUNDATION

The American Medical Education Foundation, which was established by the American Medical Association to seek contributions from the medical profession, and the National Fund for Medical Education, which was organized to seek contributions from business, industry, and other segments of our society, continued to make steady progress during the past year in raising unrestricted funds on a national basis to assist schools in securing more adequate financial support.

On July 19, 1954, the National Fund for Medical Education disbursed $2,176,904.71, collected through the combined efforts of the two organizations, to the 74 four year and 6 basic medical science schools. American medicine should take pride in the fact that $1,087,375.60 of this sum was contributed from the profession. Individual contributors to the American Medical Education Foundation have increased from slightly over 3,000 in 1951 to 18,176 during the past year, which is indicative of the tremendous potential of support from the medical profession itself as more and more physicians join in helping to meet this challenge.

TABLE 4.—*Number of New and Old Authorized and Budgeted Full-Time Positions by Departments in the Medical and Basic Science Schools of the United States, 1954-1955*

	New	Old	Total
Basic Science Departments			
Anatomy	4	21	25
Biochemistry	4	4	8
Physical chemistry	..	1	1
Physiology	9	7	16
Pharmacology	5	11	16
Microbiology	6	8	14
Pathology	6	21	27
Totals	34	73	107
Clinical Departments			
Internal medicine	13	10	23
Neurology	2	3	5
Dermatology and syphilology	1	1	2
Neurology and psychiatry	15	15	30
Surgery	6	13	19
Ophthalmology	..	4	4
Otolaryngology	2	..	2
Pediatrics	6	9	15
Obstetrics and gynecology	4	10	14
Radiology	1	10	11
Anesthesiology	4	1	5
Physical medicine	..	4	4
Preventive medicine	8	9	17
Totals	62	89	151
Analysis of Faculty Rank of Vacancies			
Basic Science Departments			
Full professors	4	10	14
Associate professors	5	22	27
Assistant professors	16	22	38
Instructors	9	19	28
Totals	34	73	107
Clinical Departments			
Full professors	12	19	31
Associate professors	6	15	21
Assistant professors	25	28	53
Instructors	19	27	46
Totals	62	89	151
Grand Totals	96	163	258

Over $6,826,900 has been disbursed by these two organizations to assist medical schools since the first grants were made in July, 1951. Both organizations continue to intensify their activities with the hope that through their combined efforts they may eventually be able to provide the medical schools of the nation with funds approximating 10 million dollars annually to aid in meeting the operational costs of their educational programs.

MEDICAL SCHOOL FACULTIES

Medical schools in the United States reported 34 new and 73 old, for a total of 107, authorized and budgeted full-time positions currently unfilled in their basic medical science faculties. In the clinical departments there are 62 new and 89 old, for a total of 151, authorized and budgeted full-time vacancies. The over-all total (table 4) lists 258 vacancies in new and old budgeted full-time faculty positions. Analysis indicates that 45 of these vacancies are professorships, 48 associate professorships, 91 assistant professorships, and 74 instructorships. The total represents 25 vacancies less than were reported the previous year.

TABLE 5.—*Analysis of Status of Faculty Personnel in Clinical Departments*

Status	All Medical Schools, United States	All Medical Schools, Canada
Absolute full-time salary (no other allowances)	2,153	25
Geographic full-time (basic salary, plus income from consultations, etc.)	2,078	32
Part-time salary (practice income unlimited)	2,876	498
Volunteer status (no stipend)	21,328	620
Totals	28,435	1,175

In view of the marked differences existing in medical schools in regard to absolute full-time, geographic full-time, part-time, and volunteer arrangements of faculty personnel in clinical departments, each institution was requested to furnish information in regard to the employment arrangements for clinical personnel. Inquiry was made as to how many faculty members of the clinical departments are employed under the following arrangements: (1) absolute full-time salary, no other allowances; (2) geographic full-time, basic salary plus income from consultation, etc.; (3) part-time salary, practice income unlimited; and (4) volunteer status, no stipend.

Table 5 is an analysis of the status of faculty personnel in clinical departments prepared from the material submitted by the medical colleges in answer to the inquiry. Twelve of the 74 four year medical schools and 3 of the 6 basic medical science schools in the United States indicated no clinical teachers were employed on an absolute full-time basis. The other 65 medical schools reported absolute full-time clinical teachers varying in number from 2 to 253. Nine four year medical schools and four basic medical science schools reported no clinical teachers employed on a geographic full-time basis, while the remaining 67 reported numbers varying from 1 to 190. Three four year medical schools and one basic medical science school reported no part-time clinical teachers. Only three of the four year schools and two of the basic science schools listed no volunteer faculty.

All but 15 of the 80 medical schools in the United States now have a nucleus of absolute full-time or geographic full-time faculty or clinical teachers, under both such arrangements, who are concerned with administration, curriculum planning, teaching, and research. Part-time and volunteer faculty members constitute by far the largest single group of teachers in the clinical fields, their duties varying from a few hours annually to large areas of responsibility. Comparative data are given in the table for the Canadian medical schools.

SCHEDULED CLOCK HOURS OF INSTRUCTION BY LECTURE

During recent years there has been a marked decrease in the amount of time devoted to the didactic lecture method of instruction in medical schools and a similarly marked increase in other methods of instruction designed to engage the active participation of the student. As now utilized by leaders in medical education, the lecture, where retained, is not an oral diarrheal repetition of the printed page but is designed to highlight advances, indicate differences of opinion and their possible resolution, and to correlate material with texts and other current literature. Small group and conference teaching has assumed a role of greater importance in general, and almost individual teacher-student relationships have become possible in many phases of instruction in the clinical fields. Such methods entail active and stimulating participation of the student in his own self-education and confront instructors with constant challenges. In many schools it is becoming the junior-colleague-senior-colleague relationship between student and teacher rather than the formal student-professor relationship that constituted the traditional approach in most institutions within recent memory and still permeates some. As far as both teachers and students are concerned, constant preparation for the challenge of active conference participation represents something live and dynamic and is conducive to maximum teaching and learning experiences.

In view of these trends, an effort was made to analyze the actual clock hours of scheduled lectures in each of the four years of the medical curriculum according to current schedules. Forty of the medical schools submitted data that have made possible the following evaluation (table 6). The remaining medical schools did not submit an approximation of scheduled lecture hours but submitted their total scheduled hours, which would include all other assignments as well as lectures. In the first year, scheduled lecture hours varied from a maximum of 605 to a minimum of 162, with an average of 366 and a median of 368. During the second year, scheduled lectures varied from a maximum of 672 to a minimum of 157, with an average of 466 and a median of 479. Thirty-four schools reported third year scheduled lectures from a maximum of 660 to a minimum of zero, with an average of 333 and a median of 300. Thirty-five institutions indicated a maximum of 384, a minimum of zero, with an average of 138 and a median of 125 scheduled lecture hours in the fourth year. This statistical data should be of interest to all institutions engaged in curriculum study and planning from the standpoint of trends. It also indicates the greater utilization of conference, group, and individual student-teacher methods that are currently so effective in many schools.

TABLE 6.—*Scheduled Clock Hours of Instruction by Lecture*

	Year of Instruction			
	First	Second	Third	Fourth
Number of schools	40	40	34	35
Maximum	605	672	660	384
Minimum	162	157	...	...
Average	366	466	333	138
Median	368	479	300	125

Students in Medical Schools

ENROLLMENTS

As has been true for the past five years, again this year the total number of students enrolled in approved medical schools in the United States established a new record. Enrollment data for this year are shown in table 1. Comparative data for previous years are given in table 7. In utilizing these data it should be noted that there are certain discrepancies in figures prior to 1942-1943 due to difficulty on the part of a few schools to classify students in conventional classes. The total enrollment figure for approved four year schools and schools of basic medical sciences was 2% higher than last year. Slightly less than half of this increase was due to the addition of the University of Puerto Rico School of Medicine to the list of approved schools and to the approval of the University of North Carolina School of Medicine as a four year school. The latter was listed previously as an approved school of basic medical sciences, and its change of status adds its junior and senior classes to total enrollment figures. It can be anticipated that total enrollment should continue to rise as the new schools and planned expansions in the schools of basic medical sciences reach the point of complete operation necessary for Council approval.

TABLE 7.—*Schools, Students, and Graduates in the Medical and Basic Science Schools in the United States, 1931-1954*

(Students in required intern year not included)

Year	Schools	Freshman	Sophomore	Junior	Senior	Total	Graduates
1930-1931	76	6,456	5,538	5,080	4,908	21,982	4,735
1931-1932	76	6,260	5,462	4,932	4,885	22,135	4,936
1932-1933	77	6,426	5,479	5,017	4,948	22,466	4,895
1933-1934	77	6,457	5,571	4,988	4,937	22,799	5,035
1934-1935	77	6,356	5,642	5,142	4,905	22,888	5,101
1935-1936	77	6,605	5,458	5,230	5,020	22,564	5,183
1936-1937	77	5,910	5,269	5,140	5,158	22,095	5,377
1937-1938	77	5,791	5,225	4,986	5,036	21,587	5,194
1938-1939	77	5,764	5,160	4,947	4,921	21,302	5,089
1939-1940	77	5,794	5,177	4,921	4,894	21,271	5,097
1940-1941	77	5,837	5,254	4,969	4,849	21,379	5,275
1941-1942	77	6,218	5,406	5,087	4,942	22,031	5,163
1942-1943	76	6,425	5,828	5,278	5,100	22,631	5,223
1943-1944	77	6,561	6,071	5,640	5,257	23,529	5,134
1944 (2d session)	77	6,648	6,140	6,084	5,794	24,666	5,169
1944-1945	77	6,523	5,979	5,700	5,826	24,028	5,136
1945-1946	77	6,060	5,750	5,751	5,655	23,216	5,826
1946-1947	77	6,564	5,575	5,767	5,994	23,900	6,389
1947-1948	77	6,487	5,758	5,154	5,340	22,739	5,543
1948-1949	78	6,688	6,194	5,702	5,086	23,670	5,094
1949-1950	79	7,042	6,344	6,079	5,638	25,103	5,553
1950-1951	79	7,177	6,690	6,263	6,056	26,186	6,135
1951-1952	79	7,436	6,846	6,577	6,195	27,076	6,080
1952-1953	79	7,425	7,063	6,725	6,475	27,688	6,668
1953-1954	80	7,449	7,068	6,983	6,727	28,227	6,861

Enrollments in the entering class were the highest yet recorded. The increase over the previous year was due in its entirety to the addition of the University of Puerto Rico, which more than compensated for a slight decrease in freshmen enrollment in the schools as listed in the previous year. It seems likely that new facilities will further increase the size of future freshman classes.

The University of Tennessee and the University of Michigan each admitted to their entering classes more than 200 students (219 and 204 respectively). There were an additional six schools that admitted 150 or more freshmen students. Six four year schools admitted less than 55 freshmen. The median number of students for the first year classes in the four year schools was 86, and the average was 98. The average for schools of basic medical sciences was 38. In addition to the regularly enrolled full-time students discussed above, medical schools in the United States had 133 part-time and special students enrolled who were working toward the M.D. degree.

Enrollment data for approved medical schools in Canada is given in table 2. Total enrollment in Canada has increased since last year by 187, or 5.3%. However, the University of British Columbia School of Medicine was added to the list of approved schools during the year covered by this report. Its total enrollment of 233 more than compensated for the small decrease in total enrollment of the schools previously listed. Enrollment in the entering class was increased 7% as compared to the preceding year. Most but not all of this increase was due to the inclusion of the University of British Columbia. Canadian schools had an additional 474 students enrolled in premedical years and 391 students enrolled in a required intern year. These figures are not included in the total given in table 2.

ENROLLMENT OF VETERANS

A substantial decline in the total number of both men and women veterans enrolled in medical schools in the United States again occurred. There were 35% fewer veterans in the medical schools in 1953-1954 than in 1952-1953 despite an increase in over-all enrollment.

Enrollment figures for veterans are given in table 8. Veterans comprised 11.6% (15.2 last year) of the freshman class, 12.9% (21) of the sophomore class, 18.8% (34.6) of the junior class, and 30.4% (46.6) of the senior class. It is interesting to note that the greatest decreases occurred in the two upper classes, and that there was a tendency toward leveling off in the two lower classes. Perhaps the higher figures for the upper classes represent a carry over from World War II, and the lower figures for the first and second year classes reflects mostly veterans from the Korean war.

TABLE 8.—*Enrollment by Classes of Veterans and Nonveterans in the Medical and Basic Science Schools in the United States, 1953-1954*

	Men			Women			Total, Men and Women
Class	Veterans	Other	Total	Veterans	Other	Total	
Freshmen	863	6,160	7,023	3	423	426	7,449
Sophomores	911	5,782	6,693	4	371	375	7,068
Juniors	1,305	5,332	6,637	6	340	346	6,983
Seniors	2,040	4,332	6,372	6	349	355	6,727
Totals	5,119	21,606	26,725	19	1,483	1,502	28,227

ENROLLMENT OF WOMEN STUDENTS

There have been no significant changes in enrollment of women since the 1952-1953 report. Information on the numbers, by school, of male and female students enrolled and graduated is given in table 9. Jefferson and Dartmouth continue to have no women students, and Woman's Medical College has no men enrolled.

TABLE 9.—*Distribution of Students and Graduates in the United States and Canada by Sex, 1953-1954*

	Students		Graduates	
United States	Men	Women	Men	Women
Medical College of Alabama	283	12	59	2
University of Arkansas	296	22	68	4
College of Medical Evangelists	345	20	89	3
University of Southern California	259	14	135	6
Stanford University	220	17	57	7
University of California	287	22	66	8
University of Colorado	279	26	75	6
Yale University	286	17	60	3
Georgetown University	429	26	102	5
George Washington University	339	11	77	1
Howard University	265	34	59	10
Emory University	278	7	70	..
Medical College of Georgia	289	15	70	3
Chicago Medical School	274	6	134	3
Northwestern University	508	25	129	7
Stritch School of Medicine	325	11	82	1
University of Chicago	261	19	62	7
University of Illinois	635	32	161	8
Indiana University	558	17	135	4
State University of Iowa	449	9	114	2
University of Kansas	443	13	101	4
University of Louisville	362	19	87	5
Louisiana State University	420	28	102	5
Tulane University	503	13	124	4
Johns Hopkins University	272	22	71	6
University of Maryland	384	20	90	6
Boston University	272	16	62	4
Harvard Medical School	494	37	138	10
Tufts College Medical School	432	17	105	5
University of Michigan	692	36	148	7
Wayne University	271	6	63	2
University of Minnesota	464	26	122	11
University of Mississippi	111	2	...	..
St. Louis University	487	4	132	..
University of Missouri	82	3	...	..
Washington University	353	13	93	3
Creighton University	293	7	70	2
University of Nebraska	333	11	90	2
Dartmouth Medical School	46	..	...	..
Albany Medical College	204	8	51	2
University of Buffalo	263	16	66	4
Columbia University	417	48	100	11
Cornell University	320	17	79	4
New York Medical College	453	25	104	8
New York University	495	35	116	5
State University of New York, New York City	537	36	122	9
State University of New York, Syracuse	274	11	65	1
University of Rochester	266	14	65	4
Duke University	301	15	77	3
University of North Carolina	221	5	46	2
Bowman Gray School of Medicine	192	8	50	..
University of North Dakota	68	2	...	..
Ohio State University	557	18	131	5
University of Cincinnati	347	5	89	..
Western Reserve University	306	29	74	11
University of Oklahoma	370	10	77	4
University of Oregon	256	11	53	3
Hahnemann Medical College	376	17	94	5
Jefferson Medical College	666	..	163	..
Temple University	491	25	127	5
University of Pennsylvania	478	24	123	4
University of Pittsburgh	370	11	95	3
Woman's Medical College of Pennsylvania	..	181	..	43
Medical College of South Carolina	265	10	53	2
University of South Dakota	62	1	...	..
Meharry Medical College	246	11	58	5
University of Tennessee	715	35	152	7
Vanderbilt University	197	9	53	1
Baylor University	341	17	82	4
Southwestern Medical College	367	27	95	3
University of Texas	567	32	125	7
University of Utah	193	5	44	1
University of Vermont	180	9	39	4
Medical College of Virginia	343	29	91	9
University of Virginia	288	4	70	..
University of Washington	274	13	65	3
West Virginia University	57	4	...	..
Marquette University	378	13	93	2
University of Wisconsin	294	24	75	4
University of Puerto Rico	151	33	37	8
Totals	26,725	1,502	6,501	360
Canada				
University of Alberta	222	14	55	6
University of British Columbia	216	17	52	2
University of Manitoba	255	12	52	6
Dalhousie University	203	9	48	5
Queen's University	334 *	25 ‖	47	6
University of Ottawa	237 †	11 †	45	2
University of Toronto	765 ‡	86 ‡	150	16
University of Western Ontario	222	15	58	3
Laval University	573 §	26 §	133	1
McGill University	415	25	106	4
University of Montreal	393	30	90	9
University of Saskatchewan	59	6	...	..
Totals	3,894	276	836	60
Grand Totals	30,619	1,778	7,336	420

Number of Premedical Students Excluded:

	Men	Women
*	60	4
†	42	2
‡	220	26
§	115	5

	Men	Women
Number of Fifth Year Students Excluded: ‖	47	6

The total number of women students and graduates and the percentage of women to total students and to total graduates is given for each year since 1905 in table 10. Figures for the years 1905 through 1929 include data for all schools (class A, B, and C); those since 1929 include data only for approved schools. Except for the years immediately following World War II, the percentage of women studying medicine and women graduates has remained quite stable.

TABLE 10.—*Women in Medicine in the United States*

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905	1,073	4.1	219	4.0
1910	907	4.0	116	2.6
1915	592	4.0	92	2.6
1920	818	5.8	122	4.0
1925	910	5.0	204	5.1
1926	935	5.0	212	5.4
1927	964	4.9	189	4.7
1928	929	4.5	207	4.9
1929	925	4.4	214	4.8
1930	955	4.4	204	4.5
1931	990	4.5	217	4.6
1932	955	4.3	208	4.2
1933	1,056	4.7	214	4.4
1934	1,020	4.5	211	4.2
1935	1,077	4.7	207	4.1
1936	1,133	5.0	246	4.7
1937	1,113	5.1	238	4.4
1938	1,161	5.4	237	4.6
1939	1,144	5.4	260	5.1
1940	1,145	5.4	253	5.0
1941	1,146	5.4	280	5.3
1942	1,164	5.3	279	5.4
1943	1,150	5.1	241	4.6
1944	1,176	5.0	239	4.7
1944 (2d session)	1,141	4.6	252	4.9
1945	1,352	5.6	202	5.1
1946	1,868	8.0	242	4.2
1947*	2,183	9.1	342	5.4
1948	2,159	9.5	392	7.1
1949	2,100	8.9	612	12.1
1950	1,806	7.2	595	10.7
1951	1,564	5.9	468	7.6
1952	1,471	5.4	351	5.7
1953	1,463	5.3	363	5.5
1954	1,502	5.3	360	5.2

* Includes additional classes.

ATTRITION OF MEDICAL STUDENTS

Medical school reports on student losses for the academic year just ended do not reach this Council in sufficient time for inclusion in the current report on medical education. Therefore, all data referred to in this section deal with the academic year 1952-1953. During the year referred to, there was a total of 606 medical students in the 79 medical schools in the United States lost to medicine. This figure includes losses due to academic failures

TABLE 11.—*Medical Student Attrition in the Eighty Approved United States Medical Schools, 1952-1953*

Class	Enrollment	Failed	Withdrew, Poor Standing	Withdrew, Good Standing	Total	Percentage of Enrollment Lost
Freshmen	7,425	234	15	130	379	5.1
Sophomores	7,063	70	16	59	145	2.1
Juniors	6,725	27	2	40	69	1.0
Seniors	6,475	2	2	9	13	0.2
Totals	27,688	333	35	238	606	...

and withdrawals for other causes. It does not include students who withdrew from one school and successfully transferred to another, since such withdrawals do not represent a loss to medicine. Table 11 depicts by class and cause this attrition.

Almost two-thirds of the students lost were in the first year class, representing about 5% of the total number enrolled in that class. Only 2% of the students lost were in the senior class, representing 0.2% of the total enroll-

TABLE 12.—*Residence of Freshman Medical*

Marginal Number	School	1 Alabama	2 Arizona	3 Arkansas	4 California	5 Colorado	6 Connecticut	7 Delaware	8 Dist. of Columbia	9 Florida	10 Georgia	11 Idaho	12 Illinois	13 Indiana	14 Iowa	15 Kansas	16 Kentucky	17 Louisiana
1	Medical College of Alabama	80	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2	University of Arkansas	..	..	92	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	College of Medical Evangelists	..	..	1	41	1	..	..	..	1	..	1	..	..	..	..	..	..
4	University of Southern California School of Medicine	1	2	..	60	1	..	..	..	..	..	..	..	..	1	..	..	..
5	Stanford University School of Medicine	..	1	..	51	..	..	..	..	..	..	..	..	..	..	..	..	..
6	University of California School of Medicine	..	..	..	67	..	..	..	..	..	..	..	..	..	..	..	..	..
7	University of Colorado School of Medicine	..	2	..	..	68	..	..	..	..	..	..	..	..	..	..	..	..
8	Yale University School of Medicine	1	1	..	1	..	10	..	2	..	..	..	3	1	..	1	..	..
9	Georgetown University School of Medicine	..	..	..	..	..	8	..	7	2	..	..	..	..	..	..	1	..
10	George Washington University School of Medicine	..	2	..	20	..	1	..	13	..	..	4	2	1	..	..	..	..
11	Howard University College of Medicine	4	..	..	2	..	3	1	8	2	..	..	2	..	..	..	..	2
12	Emory University School of Medicine	3	..	..	..	..	..	..	..	26	27	1	..	1	..	..	..	..
13	Medical College of Georgia	..	..	..	..	..	..	..	..	..	79	..	..	..	..	..	..	..
14	Chicago Medical School	..	1	..	2	1	..	..	..	1	..	..	4	..	..	..	..	..
15	Northwestern University Medical School	1	1	..	10	1	1	..	..	1	..	..	48	5	2	..	1	..
16	Stritch School of Medicine of Loyola University	1	..	1	2	..	..	..	..	..	..	..	56	2	1	..	1	..
17	University of Chicago, the School of Medicine	..	1	..	11	1	..	..	..	2	1	2	15	1	1	..	1	..
18	University of Illinois College of Medicine	..	..	..	..	..	..	..	..	..	..	..	167	..	..	..	..	..
19	Indiana University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	144	..	..	..	..
20	State University of Iowa College of Medicine	1	1	..	1	..	..	..	..	..	..	..	4	1	105	..	..	..
21	University of Kansas School of Medicine	..	..	..	1	..	..	..	..	..	..	1	1	..	..	98	..	..
22	University of Louisville School of Medicine	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	86	..
23	Louisiana State University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	125
24	Tulane University of Louisiana School of Medicine	6	2	5	3	..	1	..	..	11	4	..	2	1	..	2	..	21
25	Johns Hopkins University School of Medicine	..	1	1	4	..	2	2	1	2	1	..	2	1	1	..	..	..
26	University of Maryland School of Medicine	1	1	..	2	..	2	1	1	1	..	..	..	..	..	..	..	..
27	Boston University School of Medicine	..	..	..	..	..	5	..	..	..	..	..	1	..	..	..	..	..
28	Harvard Medical School	1	4	..	7	2	3	..	..	3	..	..	5	1	..	1	1	..
29	Tufts College Medical School	..	..	..	..	..	13	..	..	..	..	..	1	..	..	..	..	..
30	University of Michigan Medical School	..	1	..	..	..	..	..	..	..	..	..	3	3	..	..	..	..
31	Wayne University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
32	University of Minnesota Medical School	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..
33	University of Mississippi School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
34	University of Missouri School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
35	St. Louis University School of Medicine	..	2	1	7	1	2	..	1	2	1	..	11	3	1	1	..	1
36	Washington University School of Medicine	..	2	1	16	1	1	..	..	2	..	2	8	..	2	3	1	1
37	Creighton University School of Medicine	..	..	..	5	2	1	..	..	..	..	2	4	..	5	2	..	..
38	University of Nebraska College of Medicine	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
39	Dartmouth Medical School	..	..	..	2	2	1	..	1	..	..	..	2	..	..	..	..	..
40	Albany Medical College	..	..	..	..	1	1	..	..	..	..	..	1	..	..	..	..	..
41	University of Buffalo School of Medicine	..	1	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..
42	Columbia University College of Physicians and Surgeons	..	..	..	1	..	6	..	2	1	1	..	..	1	1	..	2	..
43	Cornell University Medical College	..	2	..	1	..	2	..	..	..	1	1	1	..	..	1	..	..
44	New York Medical College, Flower and Fifth Avenue Hospitals	..	..	..	3	..	14	..	..	..	..	..	..	..	..	..	..	..
45	New York University College of Medicine	..	..	..	..	..	5	..	..	..	..	..	1	..	..	..	..	..
46	State University of New York College of Medicine, New York City	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
47	State University of New York College of Medicine, Syracuse	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..
48	University of Rochester School of Medicine and Dentistry	..	..	..	..	..	3	..	..	1	..	..	1	2	..	..	1	..
49	University of North Carolina School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50	Duke University School of Medicine	1	..	..	2	..	..	1	1	10	3	..	..	..	..	..	..	1
51	Bowman Gray School of Medicine of Wake Forest College	1	..	..	3	..	..	..	..	8	2	..	1	..	..	..	..	1
52	University of North Dakota School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
53	University of Cincinnati College of Medicine	..	..	..	1	..	..	..	..	..	..	..	2	1	..	..	1	..
54	Western Reserve University School of Medicine	..	..	..	1	..	1	..	..	2	..	..	2	..	..	..	..	..
55	Ohio State University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
56	University of Oklahoma School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
57	University of Oregon Medical School	..	..	..	..	..	..	..	..	..	..	8	..	..	..	..	..	..
58	Hahnemann Medical College and Hospital of Philadelphia	..	1	..	1	..	..	..	..	1	..	..	1	..	..	..	..	..
59	Jefferson Medical College of Philadelphia	..	..	..	3	..	1	1	..	1	..	1	1	..	..	..	..	..
60	Temple University School of Medicine	..	..	..	3	..	1	3	..	1	..	..	..	1	..	..	..	..
61	University of Pennsylvania School of Medicine	1	2	1	..	..	..	..	3	3	..	..	..	..	..	..	1	..
62	Woman's Medical College of Pennsylvania	1	1	..	6	..	1	..	1	1	..	..	2	..	..	..	..	..
63	University of Pittsburgh School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
64	Medical College of South Carolina	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
65	University of South Dakota School of Medicine	..	..	..	1	..	..	..	..	..	..	1	2	..	2	..	..	..
66	University of Tennessee College of Medicine	7	3	15	..	..	..	..	..	19	3	..	1	..	..	..	8	1
67	Meharry Medical College	4	..	..	3	..	..	..	2	9	6	..	2	..	..	..	..	4
68	Vanderbilt University School of Medicine	1	..	..	3	..	..	..	..	5	..	..	1	..	1	..	8	..
69	Southwestern Medical School of the University of Texas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
70	University of Texas School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
71	Baylor University College of Medicine	..	1	2	1	..	..	..	..	..	1	..	..	..	..	..	..	..
72	University of Utah School of Medicine	..	..	..	2	..	..	..	..	..	..	6	..	..	..	..	..	..
73	University of Vermont College of Medicine	..	..	..	..	..	10	..	..	..	..	..	2	..	..	..	..	..
74	University of Virginia Department of Medicine	1	..	..	..	..	..	1	1	4	..	..	..	..	..	..	..	..
75	Medical College of Virginia	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
76	University of Washington School of Medicine	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..
77	West Virginia University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
78	University of Wisconsin Medical School	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
79	Marquette University School of Medicine	..	..	..	3	..	..	..	..	..	..	..	12	..	1	..	..	..
80	University of Puerto Rico School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
	Totals	117	36	120	376	82	101	10	44	127	130	31	377	172	124	111	113	157
81	University of Alberta Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
82	University of British Columbia School of Medicine	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
83	University of Manitoba Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
84	Dalhousie University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
85	Queen's University Faculty of Medicine	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
86	University of Ottawa Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
87	University of Western Ontario Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
88	University of Toronto Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
89	McGill University Faculty of Medicine	..	..	..	7	..	1	1	..	..	1	..	2	..	..	..	..	..
90	University of Montreal Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
91	Laval University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
92	University of Saskatchewan College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Totals	0	0	0	9	0	2	1	0	0	1	0	3	0	0	0	0	0
	Grand Totals	117	36	120	365	82	103	11	44	127	131	31	380	172	124	111	113	157
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

* Figures include two freshman classes. † Figures are for students in beginning premedical year.

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	
Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U.S. Territories and Possessions	Canada	Foreign	Summary: Home State	Summary: Out of State	Totals	Marginal Number
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	80	..	80	1
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	92	..	92	2
..	3	2	3	..	..	1	2	2	..	..	..	..	1	..	..	4	1	2	..	..	..	1	1	..	..	..	..	2	1	1	..	2	7	7	41	54	95	3
..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	60	8	68	4
..	..	..	..	..	..	..	..	1	..	..	1	..	1	..	..	1	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	51	7	58	5
..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	1	..	1	..	..	..	..	1	..	2	67	9	76	6
..	..	..	..	..	..	..	1	..	..	..	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	68	14	82	7
4	2	8	1	..	..	1	..	..	..	15	..	..	16	..	..	3	..	..	6	1	..	..	..	..	..	..	..	1	..	..	1	..	..	..	10	69	79	8
1	1	10	1	..	..	..	..	..	..	18	..	..	56	..	..	4	..	..	12	2	..	..	..	..	..	2	..	1	1	..	2	..	..	1	7	113	120	9
1	9	..	..	..	1	1	..	..	1	..	2	1	14	..	..	2	..	1	4	..	..	..	..	1	3	..	4	..	2	3	..	2	2	..	5	13	87	100	10
..	3	..	3	..	2	1	..	..	..	..	5	..	9	6	..	2	1	..	6	..	5	..	..	..	..	..	2	..	..	..	..	..	..	..	8	71	79	11
..	..	..	..	..	1	2	..	..	..	..	1	..	3	..	..	1	..	..	..	..	2	..	1	..	..	..	1	..	1	..	..	..	..	1	27	45	72	12
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	79	..	79	13
..	..	..	1	..	..	..	..	..	..	7	..	59	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	4	68	72	14
..	..	4	1	..	2	6	1	..	..	5	1	12	..	1	8	2	1	..	..	..	..	1	..	1	..	..	..	1	1	6	2	5	..	..	48	83	131	15
..	..	1	1	1	..	..	1	..	..	2	..	5	..	..	6	..	1	..	1	..	..	1	..	..	..	..	..	1	..	2	..	..	..	1	56	32	88	16
..	..	1	..	1	..	..	..	1	..	1	..	14	..	..	5	..	..	..	2	1	..	..	..	1	..	..	..	3	..	1	..	..	..	5	15	57	72	17
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	167	..	167	18
..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	144	7	151	19
..	..	..	..	..	..	1	..	1	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	105	14	119	20
..	..	..	..	..	..	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	98	13	111	21
..	..	..	..	..	..	..	..	..	..	..	1	..	7	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	1	86	14	100	22
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	125	..	125	23
..	..	2	..	..	25	3	..	..	..	..	2	..	5	2	..	2	..	..	2	..	..	..	3	16	..	..	1	..	1	..	..	4	..	6	21	114	135	24
..	14	1	3	..	..	2	..	..	..	..	2	..	7	1	..	1	..	1	8	..	4	..	..	5	..	..	2	1	..	..	..	..	1	5	14	61	75	25
1	61	2	1	..	..	..	..	..	..	2	4	..	4	..	..	2	..	..	2	..	..	..	..	..	5	..	..	..	3	..	..	6	..	2	61	43	104	26
1	..	34	..	..	..	..	..	..	..	1	5	..	13	..	..	..	..	..	2	5	..	..	..	..	..	..	..	..	..	..	..	1	..	4	34	38	72	27
2	1	23	1	1	..	2	..	..	..	..	6	..	17	3	..	9	1	1	4	2	..	1	..	3	..	..	..	2	..	..	..	..	2	6	23	92	115	28
8	..	75	..	..	..	..	..	..	..	..	4	..	5	..	..	1	..	..	..	6	..	..	..	1	..	..	..	1	..	..	..	..	..	..	75	42	117	29
..	..	..	175	..	..	..	..	..	..	..	4	1	3	..	1	6	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	4	1	..	175	29	204	30
..	..	..	75	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	75	..	75	31
..	..	..	..	121	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	121	6	127	32
..	..	..	..	..	57	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	57	..	57*	33
..	..	..	..	..	..	44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	44	..	44	34
..	1	3	4	8	..	18	6	..	..	2	2	1	8	..	..	16	..	2	5	..	..	..	..	1	..	..	..	6	..	2	..	..	..	4	18	105	123	35
..	..	2	1	..	1	19	4	..	..	..	..	..	4	..	..	..	1	2	1	..	1	..	..	4	..	..	..	1	..	1	..	2	2	2	19	67	86	36
..	..	..	1	5	..	1	..	19	..	..	5	..	5	..	1	1	..	2	..	..	..	1	..	..	..	..	..	8	..	..	2	2	..	2	19	57	76	37
..	..	..	..	..	..	..	1	79	..	..	..	..	1	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	2	79	7	86	38
..	..	..	..	..	..	..	..	1	2	2	..	..	4	..	1	3	..	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	22	24	39
..	..	1	..	..	..	..	..	..	..	..	4	..	47	1	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	1	47	12	59	40
..	..	..	..	..	..	..	..	..	..	..	2	..	60	..	..	1	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	69	11	71	41
1	3	7	1	2	..	1	1	..	..	..	13	..	63	1	..	1	1	..	6	1	..	..	..	1	..	..	..	..	..	..	..	..	..	2	63	57	120	42
..	..	4	..	..	..	1	..	..	..	..	17	..	43	..	..	1	..	1	1	..	1	..	..	..	..	1	1	1	..	..	..	..	..	3	43	41	84	43
..	..	4	..	..	1	..	..	..	..	..	22	..	78	..	..	1	..	..	..	4	..	..	..	..	1	..	..	..	..	..	..	..	..	..	78	50	128	44
..	..	1	..	..	..	..	..	..	..	..	15	..	105	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	105	25	130	45
..	..	..	..	..	..	..	..	..	..	..	19	..	136	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	136	14	150	46
..	..	..	..	..	..	..	..	..	..	..	1	..	71	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	71	5	76	47
1	..	1	..	..	..	..	..	..	..	..	1	1	40	..	1	3	..	..	6	..	..	..	..	..	..	..	..	..	2	..	4	1	..	2	40	31	71	48
..	..	..	..	..	..	..	..	..	..	..	..	..	..	60	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	60	..	60	49
..	2	..	..	..	1	2	..	..	..	..	2	..	8	35	..	..	..	..	2	..	3	..	..	..	..	..	2	..	2	..	..	..	..	1	35	44	79	50
..	..	..	..	..	..	..	..	..	..	..	1	..	2	29	..	1	1	..	1	..	2	..	..	..	..	..	1	..	..	..	..	..	..	..	29	25	54	51
..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	32	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	32	6	38	52
..	..	2	..	..	1	..	..	..	..	..	2	..	..	..	..	75	..	..	1	..	..	..	..	..	1	..	..	..	2	..	1	..	..	..	75	15	90	53
..	..	1	1	..	..	1	..	..	..	..	2	..	3	..	1	55	..	..	5	..	..	..	..	..	..	..	..	1	..	..	..	2	..	3	55	26	81	54
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	150	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	150	..	150	55
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	..	100	56
..	..	..	..	..	..	..	3	..	..	..	..	1	..	..	..	..	..	56	..	..	..	..	..	..	..	..	..	4	..	..	..	1	1	1	56	19	75	57
..	..	..	1	..	..	..	..	..	..	..	18	..	..	..	..	5	..	..	74	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	74	31	105	58
..	..	1	1	..	..	..	..	..	..	..	17	..	6	..	..	7	..	..	122	..	..	..	..	1	..	..	..	4	..	..	..	1	..	3	1 2	49	171	59
..	1	..	..	..	..	1	..	1	..	..	19	..	5	..	..	1	1	..	85	..	..	..	..	..	1	..	1	2	1	..	3	..	..	85	46	131	60
..	1	4	2	..	1	..	..	..	..	..	13	..	10	3	..	4	..	..	73	..	..	..	1	..	..	..	1	..	2	..	..	1	..	..	73	54	127	61
..	..	1	..	..	..	..	..	..	..	..	4	..	12	..	..	1	..	..	17	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	17	34	51	62
..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	98	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	98	2	100	63
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	80	..	..	..	..	..	..	..	..	..	..	..	..	..	80	..	80	64
..	..	..	..	1	..	..	..	1	..	..	..	..	1	..	1	..	..	..	..	..	..	21	..	..	..	..	..	..	..	..	..	..	..	..	21	10	31	65
..	..	..	..	..	12	2	..	..	..	..	1	..	2	5	..	..	2	..	..	..	1	..	129	3	..	..	2	..	1	..	..	..	..	2	129	90	219	66
..	2	..	1	..	7	2	..	..	..	..	1	..	3	3	..	1	..	..	..	..	3	..	7	3	..	..	2	..	..	..	..	..	..	..	7	58	65	67
..	..	..	..	..	1	4	..	..	..	..	..	1	4	..	..	2	..	..	1	..	..	..	19	..	..	..	..	..	1	..	..	..	..	1	19	34	53	68
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100	..	..	..	..	..	..	..	..	..	..	100	..	100	69
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	161	..	..	..	..	..	..	..	..	..	..	161	..	161	70
..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	78	..	..	..	..	..	..	..	..	..	3	78	15	93	71
..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	44	..	..	..	..	..	..	..	..	..	44	10	54	72
2	..	1	..	..	..	..	..	..	..	3	5	..	5	..	..	1	..	..	..	1	..	..	..	..	..	21	..	..	..	..	..	..	..	..	21	30	51	73
..	1	..	..	..	..	..	..	..	..	..	1	..	4	..	..	..	..	..	..	..	..	..	1	..	..	..	78	..	3	..	..	..	..	1	58	18	76	74
..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	2	..	..	1	..	..	..	..	..	..	..	73	..	3	..	..	1	..	..	73	11	84	75
..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	71	..	..	..	..	..	..	71	4	75	76
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32	..	..	..	..	..	32	..	32	77
..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	84	..	..	..	..	84	3	87	78
..	..	..	4	2	..	2	..	..	..	..	1	..	6	..	..	4	..	..	1	..	..	2	..	..	..	..	..	1	..	60	..	1	..	1	60	41	101	79
..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	47	..	1	47	3	50	80
22	105	192	286	146	113	126	27	107	1	12	268	13	978	151	39	398	114	82	560	27	102	30	162	381	58	24	153	106	70	164	13	97	13	101	5,077	2,372	7,449	
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	58	..	58	81
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	53	5*	58	82
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	55	6	61	83
..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	54	2	58	84
..	..	..	..	..	..	..	..	..	..	..	..	..	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	53	2	53	85
1	..	2	..	..	..	..	..	..	..	1	..	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	4	50	86
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	60	..	60	87
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	128	..	128	88
2	..	4	1	..	..	..	..	..	..	2	1	..	12	..	..	4	..	..	1	..	..	..	..	1	..	..	..	7	..	..	..	1	56	9	56	57	113	89
..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	125	..	125	1	126	90
..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	117	1	117	3	120†	91
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	53	..	33	..	33	92
3	0	8	1	0	0	0	0	0	0	5	1	0	25	0	0	4	0	0	1	0	0	0	0	1	0	0	0	8	0	0	0	1	842	29	812	103	945	
25	105	200	287	146	113	126	27	107	1	17	269	13	1,003	151	39	402	114	82	561	27	102	30	162	382	58	24	153	114	70	164	13	98	855	130	5,919	2,475	8,394	
18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	

ment in that class. Attrition due to academic failure (55.5%) and withdrawals in poor academic standing (5.5%) for all classes combined account for approximately two-thirds of all losses. The remaining one-third were losses due to withdrawal of students in good standing.

It is perhaps of some importance to note that the lowest relative incidence of withdrawals in good academic standing was in the freshman class; in the upper three classes almost half of all losses were in this category. It is unfortunate that detailed information in regard to this group is not available, for many of these students apparently had sufficient intellectual ability for the study of medicine. It seems possible that some of the losses in this category might have been prevented had it been possible to offer additional financial assistance, guidance, and counseling.

There were no failures in the freshman classes of 25 schools, including five two-year schools. There were less than 5% first year failures in 35 schools, including one two-year school; between 5 to 10% such failures in 13 schools; and more than 10% in six schools, including one two-year school. As compared to the over-all freshman failure rate of 5.1%, the highest rate reported by any individual school was 17%. The percentage of failure for classes other than the first year class was not significantly different in those schools reporting no freshman failures than in all other schools. Neither was there any significant difference found in withdrawal rates.

Fourteen medical schools, 13 state supported and 1 city supported, admitted to their freshman classes in 1952-1953 only residents of the state in which the school is located. The failure rate for freshmen in these schools was essentially double (5.5%) that for all other schools (2.8%). Computations made from material presented by Stalnaker [8] indicate that these 14 schools had in the year under consideration 2.7 applications for each position available as compared to 8.6 applications for each position available in all other schools. Three of these 14 schools were schools of basic medical sciences. Two of the three were the only schools in their respective states, so that their students upon completion of the two year course of study were in the position of having to seek advanced standing in a medical school in another state even though their own institution accepted no students from other states.

During the year 1952-1953, there were 101 freshmen who had originally enrolled in another year but were listed for this year as repeaters. These were distributed in 33 schools, 89 repeating as a result of scholastic difficulty and the remainder because of illness. In any of the institutions concerned where there is a fixed number of positions available in the entering class, freshman students repeating the year can represent a loss to medicine. Although the alternatives are such as to make such losses inevitable, any calculation of total losses to medicine would have to take this group into consideration.

As opposed to the attrition rate in the entering class of 1952-1953 of 5.1%, the attrition rate for freshmen 15 years ago was 9.4%, 20 years ago 14.1%, and 25 years ago 14.4%. It is not possible to ascribe this significant change to any specific cause with complete certainty. However, it surely is not unreasonable to presume that it must be due in part to improved selection methods and greatly intensified efforts in the area of student guidance and counseling.

GEOGRAPHIC SOURCE OF FRESHMAN STUDENTS AND THE RELATIONSHIP OF PRIVATE AND GOVERNMENT-OWNED MEDICAL SCHOOLS

The "state of residence" can be interpreted in many ways under different circumstances. Since, at times, it may be to the advantage of a medical student to claim as his place of residence the state in which the medical school he is enrolled in is located, it is impossible to declare that the material presented in this section is in fact based on the legally permanent residence of medical students. The data were derived from the enrollment information submitted by the medical schools, and the only claim that can be made is that designated places of residence were apparently acceptable to the schools themselves.

It also seems advisable to again remind the reader that figures relative to enrollment of students include data from only those schools listed, all of whom are fully approved by the Council on Medical Education and Hospitals. Figures from schools that do not as yet have complete programs in effect are not included, since such institutions are not eligible for Council approval. Figures for students enrolled in approved schools who were dropped or withdrew during the academic year are included, but figures for students who were accepted for enrollment but who withdrew before actual enrollment are not included. Reference has been made in previous sections of this report, and will be made again in this section, to Stalnaker's report, "The Study of Applicants." [9]

Apparent discrepancies between enrollment and geographic source of students in that study and this report are accounted for by the qualifications given above.

Table 12 presents the residence of students at the time of their enrollment in the 1953-1954 entering classes in all approved medical schools in the United States and Canada. Study of this table reveals that 41% of all first year students in the United States came from six states (New York, Pennsylvania, Ohio, Texas, Illinois and California). According to "The Study of Applicants," [9] prepared by the Association of American Medical Colleges, 43% of all applicants came from these same six states.

There were fewer than 25 freshman students from each of seven states (Delaware, Maine, Nevada, New Hampshire, New Mexico, Vermont, and Wyoming) and a total of 95 students, representing 1.3% of the total first year class enrollment from these states. Stalnaker's study indicates that 1.4% of all applicants came from these seven states.

Table 13 lists states in ascending order according to the number of enrolled first year medical students per 100,000 population. It can be seen that the six states heavily represented by freshman students are well scattered throughout this list, with half of them having fewer first year medical students than the median (4.5 per

8. Stalnaker, J. M.: The Study of Applicants, 1952-1953, J. M. Educ. **28**: 21-28 (Feb.) 1953.

9. Stalnaker, J. M.: The Study of Applicants, 1953-1954, J. M. Educ. **29**: 13-20 (April) 1954.

100,000) and half having more. However, the seven states whose residents are poorly represented in the first year classes of approved medical schools have, with one exception, fewer freshman medical students enrolled than the median, and five out of the seven occupy the first five positions as states with the fewest number of students per 100,000 population. It is interesting and possibly significant to note that within the six heavily represented states are located 29 (36%) of the 80 approved schools. In the seven states poorly represented only one four year medical school is located.

In 15 approved medical schools, enrollment of first year students was restricted to residents of the state in which the school is located. Fourteen of these are state-supported schools and the other is municipally supported. From information contained in Stalnaker's study, it can be shown that there were 2.5 applications per available position in these schools as compared to 7.4 applications per position in all other schools. In another section of this report (attrition of medical students) similar data are given for the 1952-1953 entering class, and it is to be noted that the failure rate among 1952-1953 freshman students in these schools with complete restriction of enrollment to in-state residents was almost double that for first year students in all other schools. As was true for the 1952-1953 class, three schools of the basic medical sciences limited enrollment completely to state residents. Two of these three schools are the only medical schools located in their respective states.

TABLE 13.—*Ratio of Freshman Students to State Population, 1953-1954*

Numbers of students per 100,000 population * in the medical and basic science schools of the United States

†New Mexico	1.7	Connecticut	4.6
†New Hampshire	2.3	South Carolina	4.6
†Maine	2.5	Wisconsin	4.6
†Nevada	2.5	Ohio	4.7
†Delaware	2.8	South Dakota	4.7
California	2.9	Iowa	4.8
Missouri	3.1	Minnesota	4.8
†Rhode Island	3.2	Tennessee	4.9
Georgia	3.6	Oregon	5.0
North Carolina	3.6	Oklahoma	5.1
West Virginia	3.6	District of Columbia	5.2
Alabama	3.8	†Idaho	5.2
†Florida	3.9	Mississippi	5.2
Kentucky	3.9	†New Jersey	5.2
Massachusetts	3.9	Pennsylvania	5.2
†Arizona	4.0	Kansas	5.5
Illinois	4.1	Colorado	5.6
Indiana	4.1	Louisiana	5.6
Maryland	4.1	New York	6.4
†Wyoming	4.1	Vermont	6.4
Michigan	4.2	Arkansas	6.5
Washington	4.2	North Dakota	6.5
Virginia	4.3	Utah	7.7
†Montana	4.4	Nebraska	7.9
Texas	4.5	United States	4.7

* Population Estimates, Current Population Reports, Jan. 28, 1954, Series P-25, No. 89, Washington, D. C.
† State with no medical school.

In four other schools out-of-state students accounted for less than 5% of the entering class; in four schools, 5 to 10% of students were from out of state; in 34 schools, 10 to 50% of the students were from out of state; and in 22 schools, 50 to 94% of students were from out of state. Information as to the number of non-resident first year students at the University of Puerto Rico School of Medicine was not available.

Of the 23 schools limiting out-of-state residents to less than 10% of the positions in the entering class, all but one is a state or municipally supported institution. Of the 22 schools admitting out-of-state residents to more than 50% of the positions in the entering class, all but one is a privately supported institution. Of all students, 49.9% in the entering class were admitted to state or municipally supported institutions, and 50.1% were admitted to privately supported institutions. Of the freshmen enrolled in government supported schools, 394 or 10.6% were residents of states other than that in which the schools were located. In the first year classes of the private schools, 1,984 students, or 53.2% of the total freshmen enrollment, were out-of-state residents.

TABLE 14.—*Medical Schools Classified by Ownership, 1953-1954*

Privately Owned

1. College of Medical Evangelists
2. Stanford University School of Medicine
3. University of Southern California School of Medicine
4. Yale University School of Medicine
5. Georgetown University School of Medicine
6. George Washington University School of Medicine
7. Howard University College of Medicine
8. Emory University School of Medicine
9. Chicago Medical School
10. Northwestern University Medical School
11. Stritch School of Medicine of Loyola University
12. University of Chicago, the School of Medicine
13. Tulane University of Louisiana School of Medicine
14. Johns Hopkins University School of Medicine
15. Boston University School of Medicine
16. Harvard Medical School
17. Tufts College Medical School
18. St. Louis University School of Medicine
19. Washington University School of Medicine
20. Creighton University School of Medicine
21. Dartmouth Medical School
22. Albany Medical College
23. Columbia University College of Physicians and Surgeons
24. Cornell University Medical College
25. New York Medical College, Flower and Fifth Avenue Hospitals
26. New York University College of Medicine
27. University of Buffalo School of Medicine
28. University of Rochester School of Medicine and Dentistry
29. Duke University School of Medicine
30. Bowman Gray School of Medicine of Wake Forest College
31. Western Reserve University School of Medicine
32. Hahnemann Medical College and Hospital of Philadelphia
33. Jefferson Medical College of Philadelphia
34. Temple University School of Medicine
35. University of Pennsylvania School of Medicine
36. University of Pittsburgh School of Medicine
37. Woman's Medical College of Pennsylvania
38. Meharry Medical College
39. Vanderbilt University School of Medicine
40. Baylor University College of Medicine
41. Marquette University School of Medicine

State Owned

1. Medical College of Alabama
2. University of Arkansas School of Medicine
3. University of California School of Medicine
4. University of Colorado School of Medicine
5. Medical College of Georgia
6. University of Illinois College of Medicine
7. Indiana University School of Medicine
8. State University of Iowa College of Medicine
9. University of Kansas School of Medicine
10. Louisiana State University School of Medicine
11. University of Maryland School of Medicine and College of Physicians and Surgeons
12. University of Michigan Medical School
13. University of Minnesota Medical School
14. University of Mississippi School of Medicine
15. University of Missouri School of Medicine
16. University of Nebraska College of Medicine
17. State University of New York College of Medicine at New York City
18. State University of New York College of Medicine at Syracuse
19. University of North Carolina School of Medicine
20. University of North Dakota School of Medicine
21. Ohio State University College of Medicine
22. University of Oklahoma School of Medicine
23. University of Oregon Medical School
24. Medical College of South Carolina
25. University of South Dakota School of Medicine
26. University of Tennessee College of Medicine
27. Southwestern Medical School of The University of Texas
28. University of Texas School of Medicine
29. University of Utah School of Medicine
30. University of Vermont College of Medicine
31. Medical College of Virginia
32. University of Virginia Department of Medicine
33. University of Washington School of Medicine
34. West Virginia University School of Medicine
35. University of Wisconsin Medical School
36. University of Puerto Rico School of Medicine

Municipally Owned

1. University of Louisville School of Medicine
2. Wayne University College of Medicine
3. University of Cincinnati College of Medicine

Table 14 lists all approved United States medical schools according to type of ownership. The University of Puerto Rico School of Medicine represents an addition to the list of state-owned schools since last year.

TRANSFER OF STUDENTS FROM SCHOOLS OF BASIC MEDICAL SCIENCES TO MEDICAL SCHOOLS

All graduates of the five years between 1949 and 1953 of the six United States and one Canadian schools of basic medical sciences were successful in transferring with advanced standing to an approved four year medical school.

TABLE 15.—*Transfer of Students from Schools of Basic Medical Science to Medical Schools, 1949-1953*

Medical School	No.
Medical College of Alabama	14
University of Arkansas	1
College of Medical Evangelists	3
University of Southern California	4
Stanford University	..
University of California	5
University of Colorado	26
Yale University	..
Georgetown University	..
George Washington University	4
Howard University	..
Emory University	7
Medical College of Georgia	..
Chicago Medical School	..
Northwestern University	63
Stritch School of Medicine	4
University of Chicago, The School of Medicine	..
University of Illinois	28
Indiana University	6
State University of Iowa	28
University of Kansas	30
University of Louisville	26
Louisiana State University	25
Tulane University	33
Johns Hopkins University	17
University of Maryland	6
Boston University	7
Harvard Medical School	83
Tufts College Medical School	1
University of Michigan	6
Wayne University	..
University of Minnesota	2
St. Louis University	11
Washington University	77
Creighton University	13
University of Nebraska	32
Albany Medical College	6
University of Buffalo	2
Columbia University	10
Cornell University	14
New York Medical College	..
New York University	5
State University of New York, New York	..
State University of New York, Syracuse	..
University of Rochester	9
University of North Carolina	..
Duke University	7
Bowman Gray School of Medicine	13
University of Cincinnati	8
Western Reserve University	9
Ohio State University	..
University of Oklahoma	4
University of Oregon	1
Hahnemann Medical College	..
Jefferson Medical College	13
Temple University	16
University of Pennsylvania	27
Woman's Medical College	2
University of Pittsburgh	28
Medical College of South Carolina	1
University of Tennessee	99
Meharry Medical College	1
Vanderbilt University	9
Southwestern Medical School	20
University of Texas	..
Baylor University	18
University of Utah	1
University of Vermont	5
University of Virginia	8
Medical College of Virginia	109
University of Washington	7
University of Wisconsin	..
Marquette University	4
University of Puerto Rico	..
Total	1,018

Students completing the two year program in United States schools of basic medical sciences were accepted by 57 of the 74 approved four year schools in the United States and one of the approved Canadian schools. Four schools in the United States accepted students from all 6 of the currently existing schools of basic medical sciences, and 10 others accepted students from at least 4 of them. Of the 17 schools in the United States not accepting any such students during this period, 8 are privately supported and 9 are state or municipally supported.

Table 15 indicates the number of such students accepted by each of the approved four year schools in the United States. This study was prepared with the thought that it would be of value to both students of the schools of basic medical sciences and their faculty advisors.

All students completing the program of the University of Saskatchewan school of basic medical sciences during this period were accepted by 7 of the 11 approved four year Canadian schools.

PREPROFESSIONAL REQUIREMENTS AND ATTAINMENTS OF THE ENTERING CLASS

Preprofessional Requirements.—In order to provide an opportunity for students to gain a broad educational background, the Council on Medical Education and Hospitals recommends four years of preprofessional college training. Since January, 1953, the minimum requirement for admission to an approved medical school has been three years of college work with the provision that rarely and only under exceptional circumstances will an approved medical school be justified in admitting a superior student with only two years of college preparatory work. That this provision needs careful interpretation is illustrated by the fact that out of a total of 40 students with only two years of college study admitted to the first year class in the academic year 1953-1954, all were admitted to two medical schools and one of these schools accepted 38 such applicants

In keeping with the desire to allow students preparing for the study of medicine the opportunity for a broad, balanced education with ample freedom to follow individual interests, the courses required for premedical study by this Council have been reduced to a minimum.[10] The subcommittee on preprofessional education of the Survey of Medical Education strongly endorses this principle.[2] They also urge that medical schools abandon the practice of listing "recommended" courses to further facilitate achievement of this aim.

Stalnaker and Eindhoven have collected data on the courses required and courses recommended by the medical schools in this country.[11] Required course material in all fields varies from 27 hours to 84, with a median of 42 hours. More than two-thirds of the medical schools list additional "recommended" science courses. A somewhat smaller number list "recommended" courses in the humanities and social sciences and less than one-third of all medical schools completely refrain from recommending courses.

College Record.—This represents the fourth consecutive year in which data have been reported on the scholastic records of students entering medical school. As was true last year, medical schools were asked to report the average college grades of their students on the basis of a four point scale in which 4.0 represents the highest attainable grade. A grade of 3.6 to 4.0 is approximately

10. Essentials of an Acceptable Medical School, Council on Medical Education and Hospitals, American Medical Association, Chicago, December, 1951.

11. Stalnaker, J. M., and Eindhoven, J.: Admission Requirements of American Medical Colleges, Association of American Medical Colleges, Chicago, 1954.

equivalent to "A," 2.6 to 3.5 to "B," and 1.6 to 2.5 to "C." Seventy-two of the 80 schools provided the data requested.

Table 16 presents a comparison of the college records of the 1952-1953 first year class in medicine and the 1953-1954 first year class. It is worth noting that even though the change has not been dramatic, there has been this year an increase in the number of students entering medical school with a better college record than was true last year. This has occurred in spite of the decrease in the number of applicants from 16,763 to 14,678 during the same period as reported by Stalnaker.[9]

Table 17 presents the number of students in the 1953-1954 entering class who had been awarded the baccalaureate degree prior to admission to medical school. Approximately 70% of this entering class were in this category. If the same relative number of students in this class receive such a degree during the course of their medical studies as did the class graduating from medical school in 1952-1953, then at the time of graduation in 1956-1957 almost 90% will possess both the baccalaureate degree and the medical degree.

TABLE 16.—*Comparison of College Record, Freshman Class, 1952-1953 and 1953-1954*

College Grade Average	Percentage of 1953-1954 Freshman Class	Percentage of 1952-1953 Freshman Class
3.6-4.0 (A)	21.1	18.0
2.6-3.5 (B)	68.9	67.5
1.6-2.5 (C)	10.0	14.5

THE NEXT FRESHMAN CLASS

Figures currently available suggest that the forthcoming new first year medical school class will show a slight reduction over the record size of the 1953-1954 entering class. It can be anticipated, however, that in a few years other new records will be established as new schools and contemplated expansion of existing schools are completed.

As of June of this year, 98% of the anticipated class had already been selected. There will apparently be no significant change in the number of veteran students enrolled, which strengthens the presumption made in another section of this report that the veteran population in the early years of medical school probably represent veterans of the Korean war while those from World War II have largely disappeared from the medical student group.

GRADUATES

For the second consecutive year, the number of graduates of approved medical schools in the United States established a new record. The 6,861 graduates of this year represent a 2.9% increase over last year. As was true last year, part of the increase was due to discontinuation of the required internship year so that two schools, University of Southern California and Chicago Medical School, graduated two classes. Even taking this into account, in both years there would have been a record number of graduates. The addition of the graduates of the University of Puerto Rico and University of North Carolina accounts for a significant part of the increase

TABLE 17.—*Freshmen and Graduates with Baccalaureate Degrees in Medical Schools in the United States and Canada, July 1, 1953 to June 30, 1954*

	Freshmen			Graduates		
	No. of Freshmen	No. Holding Degrees	Percentage with Degrees	No. of Graduates	No. Holding Degrees	Percentage with Degrees
United States						
Medical College of Alabama	80	56	70.0	61	61	100.0
University of Arkansas	92	55	59.8	72	42	58.3
College of Medical Evangelists	95	94	98.9	92	91	98.8
University of Southern California	68	45	66.2	141	93	66.0
Stanford University	58	23	39.7	64	64	100.0
University of California	76	42	55.3	74	72	97.3
University of Colorado	82	58	70.7	81	74	91.2
Yale University	79	62	78.5	63	57	90.5
Georgetown University	120	119	99.2	107	106	99.8
George Washington University	100	74	74.0	78	66	84.6
Howard University	79	79	100.0	69	69	100.0
Emory University	72	50	69.4	70	68	97.1
Medical College of Georgia	79	62	78.5	73	70	95.9
Chicago Medical School	72	72	100.0	137	125	91.2
Northwestern University	131	82	62.6	136	116	85.3
Stritch School of Medicine	88	56	63.6	83	66	79.6
University of Chicago	72	43	59.7	69	43	62.3
University of Illinois	167	70	41.9	169	167	98.8
Indiana University	151	68	45.0	139	133	95.6
State University of Iowa	119	59	49.6	116	93	80.2
University of Kansas	111	74	66.7	105	105	100.0
University of Louisville	100	86	86.0	92	90	98.9
Louisiana State University	125	57	45.6	107	98	92.0
Tulane University	135	61	45.2	128	106	82.8
Johns Hopkins University	75	75	100.0	77	77	100.0
University of Maryland	104	68	65.4	96	87	90.7
Boston University	72	71	98.6	66	63	93.9
Harvard Medical School	115	106	92.2	148	143	96.7
Tufts College Medical School	117	111	94.9	110	108	98.0
University of Michigan	204	126	61.8	155	148	96.1
Wayne University	75	40	53.3	65	56	86.2
University of Minnesota	127	51	40.2	133	133	100.0
University of Mississippi	57	26	45.6	...	...	.....
St. Louis University	123	97	78.9	132	112	84.8
University of Missouri	44	31	70.5	...	...	.....
Washington University	86	63	73.3	96	93	96.9
Creighton University	76	38	50.0	70	48	68.6
University of Nebraska	86	51	59.3	92	61	66.3
Dartmouth Medical School	24	3	12.5	...	...	.....
Albany Medical College	59	58	98.3	53	51	96.2
University of Buffalo	71	49	69.0	70	53	75.7
Columbia University	120	116	96.7	111	109	98.2
Cornell University	84	80	95.2	83	83	100.0
New York Medical College	128	123	96.1	112	107	95.5
New York University	130	105	80.8	121	114	94.2
State University of New York at New York City	150	139	92.7	131	114	87.0
State University of New York at Syracuse	76	53	69.7	66	60	90.9
University of Rochester	71	60	84.5	69	64	92.8
University of North Carolina	60	36	60.0	48	47	97.9
Duke University	79	50	63.3	80	64	80.0
Bowman Gray School of Medicine	54	27	50.0	50	45	90.0
University of North Dakota	38	11	28.9	...	...	.....
University of Cincinnati	90	80	88.9	89	84	94.4
Western Reserve University	81	80	98.8	85	81	95.0
Ohio State University	150	139	92.7	136	135	99.3
University of Oklahoma	100	41	41.0	81	64	79.1
University of Oregon	75	34	45.3	56	56	100.0
Hahnemann Medical College	105	99	94.3	99	98	99.0
Jefferson Medical College	171	162	94.7	163	160	98.8
Temple University	131	116	88.5	132	108	74.2
University of Pennsylvania	127	120	94.5	127	124	97.9
Woman's Medical College	51	50	98.0	43	43	100.0
University of Pittsburgh	100	91	91.0	98	90	91.8
Medical College of South Carolina	80	66	82.5	55	53	94.4
University of South Dakota	31	19	61.3	...	...	.....
University of Tennessee	219	92	42.0	159	76	47.8
Meharry Medical College	65	60	92.3	63	60	95.2
Vanderbilt University	53	24	45.3	54	54	100.0
Southwestern Medical School	100	71	71.0	98	76	77.5
University of Texas	161	70	43.5	132	115	87.1
Baylor University	93	38	40.9	86	65	75.5
University of Utah	54	24	44.4	45	45	100.0
University of Vermont	51	45	88.2	43	38	88.4
University of Virginia	76	70	92.1	70	67	95.7
Medical College of Virginia	84	71	84.5	100	98	98.0
University of Washington	75	41	54.7	68	48	70.6
West Virginia University	32	15	46.9	...	...	.....
University of Wisconsin	87	33	37.9	79	79	100.0
Marquette University	101	33	32.7	95	66	69.5
University of Puerto Rico	50	40	80.0	45	45	100.0
Totals	7,449	5,227	70.2	6,861	6,143	89.5
Canada						
University of Alberta	..	..	...	61	61	100.0
University of British Columbia	..	..	...	54	47	87.0
University of Manitoba	..	..	...	58	14	24.1
Dalhousie University	..	..	...	53	21	39.6
Queen's University	..	..	...	53	13	24.5
University of Western Ontario	..	..	...	61	31	50.8
University of Toronto	..	..	...	106	36	21.7
McGill University	..	..	...	110	105	95.5
University of Montreal	..	..	...	99	99	100.0
Laval University	..	..	...	134	134	100.0
University of Ottawa	..	..	...	47	26	55.3
Totals				896	587	65.5

for the current year. Information regarding numbers of graduates over a period of 25 years can be found in table 7.

Canadian medical schools reported 896 graduates, 71 more than last year. A large part of this increase was due to the inclusion of graduates of the University of British Columbia.

TABLE 18.—*Medical Schools Offering Preceptorship Programs, 1953-1954*

University of Arkansas	University of Buffalo
College of Medical Evangelists	Duke University
University of California	University of Oklahoma
Emory University	University of Oregon
Indiana University	Hahnemann Medical College
State University of Iowa	University of Pennsylvania
University of Kansas	University of South Dakota
University of Louisville	University of Texas
Boston University	University of Vermont
University of Nebraska	University of Washington
Albany Medical College	University of Wisconsin

It is estimated that there will be close to 7,000 graduates of United States schools and over 900 graduates of Canadian schools in 1954-1955.

As shown in table 17, there was an increase again in the number and percentage of graduates in both United States and Canadian schools holding baccalaureate degrees. Of the graduates of United States schools, 89.5% held such degrees, and 65.5% of the graduates of Canadian schools held such a degree.

PRECEPTORSHIPS

Table 18 lists the medical schools in the United States that offered preceptorships during the 1953-1954 academic year. The Medical School at Yale University and the Stritch School of Medicine both discontinued such programs during that year. However, Stritch as well as Alabama, which also previously offered a preceptorship program, plan to reinstitute programs again in the coming year. The University of California School of Medicine and Hahnemann Medical College instituted new programs.

Of the programs offered during the year covered by this report, 13 were elective and 9 were required. A total of 1,019 students participated in these programs. One of the programs was offered in the last year of a basic medical science school, another in the third year, and the remaining 20 were presented either in the summer between the third and fourth year or during the fourth year.

TABLE 19.—*Students in the Required Intern Year in the United States, 1931 to 1954*

Year	Number	Year	Number
1930-1931	1,025	1943-1944	451
1931-1932	1,067	1944 (second session)	447
1932-1933	1,106	1944-1945	452
1933-1934	1,183	1945-1946	488
1934-1935	1,233	1946-1947 *	582
1935-1936	1,213	1947-1948	447
1936-1937	1,255	1948-1949	458
1937-1938	1,132	1949-1950	454
1938-1939	1,152	1950-1951	501
1939-1940	1,152	1951-1952	379
1940-1941	1,058	1952-1953	407
1941-1942	767	1953-1954	203
1942-1943	639		

* Includes additional classes.

The programs varied in duration from two weeks to three months with a median of five and one-half weeks. Only four of the programs in effect have been in existence more than 5 years and only two more than 10 years, one of which (Wisconsin) was instituted in 1925.

REQUIRED INTERNSHIPS AND NATIONAL INTERNSHIP MATCHING PROGRAM

It is interesting to note that despite variations there has been over the past years a definite, and now almost completed, trend toward abandoning the internship as a requirement for graduation from medical school in the United States. Table 19 illustrates this trend. Two of the three schools represented by the 203 students who served this requirement in 1953-1954 have already abandoned the required internship. Thus, it can be anticipated that figures for 1954-1955 will establish another record low.

Table 20 indicates the schools in the United States and Canada that continue this requirement. It should be noted that of the two United States schools listed, one (Duke) does not withhold the medical degree until the internship is completed but has an arrangement with its students whereby they agree to spend two years after graduation in a hospital or laboratory before entering practice. For this reason, students from Duke University have never been included in the figures in table 19.

The almost total disappearance of the requirement of the internship as a prerequisite to medical school graduation has not been due to the shifting of responsibility for this requirement from the medical schools to the state licensing boards, for only 26 states, the District of Columbia, Alaska, Canal Zone, Guam, Hawaii, and Puerto Rico include such a requirement in their licensing laws. It would seem more likely that the abandonment of this has been brought about by the realization that graduates of U. S. medical schools have themselves over a period of many years maturely recognized the value and necessity of further formal training.

TABLE 20.—*Medical Schools Requiring an Internship*

United States
Stanford University School of Medicine
Duke University School of Medicine *
Canada
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Ottawa Faculty of Medicine
Laval University Faculty of Medicine
University of Montreal Faculty of Medicine

* Degree not withheld until internship completed.

Records of the graduates in 1952-1953 were examined, and it was learned that all but two of these 6,668 graduates had accepted internships or in a few instances positions as fellows or assistant residents. Both graduates who did not take some form of graduate training were married women students, and neither of them entered practice. Not a single graduate of that year entered practice directly from medical school.

It has been observed that almost all of the misunderstandings and objections to the National Intern Matching Program have arisen as a result of lack of familiarity with the objectives and methods of the program. To facilitate better understanding of this program on the part of individual physicians and hospital staff groups the following statement, presented by the director of operations of the National Intern Matching Program, is presented:

The National Intern Matching Program, Incorporated, operates the "matching program" for internship appointment now entering its fourth year of operation. It offers an orderly method of intern placement consonant with American principles of individual freedom. Some 10,700 internships at 820 hospitals (each approved for internship training by the American Medical Association) are offered each year to the 6,400-plus graduating

seniors who seek internships. Some 4,500 internships will go unfilled, no matter what system is used. Approximately 1,500 of these positions are later filled by foreign trained graduates, second year interns, etc. Competition among hospitals is, therefore, extremely keen. Certain popular hospitals have a plethora of applicants while others do not attract a single applicant. These popular internships are filled (146 hospitals were completely filled in 1954; 246 of the 1,032 separate intern training programs were filled) and this creates great student competition, in spite of the surplus of internships.

The National Intern Matching Program is completely controlled and operated jointly by the American Medical Association, the American Hospital Association, the Association of American Medical Colleges, the Catholic Hospital Association and the American Protestant Hospital Association. Two student representatives-at-large, with full voting rights, are members of the Board of Directors. It is a non-profit corporation.

The core of the matching program is freedom of choice for students and hospitals, and the preservation of the bargaining rights of both. This freedom is the cornerstone of the program. Applications are initiated by student and hospital, and not by the matching program. Students apply to hospitals which interest them for whatever reasons appeal to them. Each student makes out, privately, a confidential preference list of internships, and each hospital confidentially ranks its student applicants. The student's confidential preference list gives him an opportunity to escape pressures from hospitals and advisers. The NIMP matches the choices as follows:

Each student is matched with the hospital highest on his list that will accept him (i. e., that cannot fill with other applicants the hospital prefers to him). If his first choice hospital does not want him, his chances at his second (or third or fourth) are in no way diminished. Thus he goes only where he wants to go, and always to the internship *he* most desires which will accept him.

Each hospital gets everyone of its applicants it desires (to the number it specifies) provided that the applicant prefers this hospital to any other one open to him. If more applicants desire the hospital than the hospital has openings, the hospital's ranking list determines who the preferred men will be. If a highly ranked man goes elsewhere, by his own choice, the hospital's chances for lower ranked men are in no way reduced. The hospital gets only men it wants, and as many as it wants, *provided* it can attract enough applicants that prefer it to other hospitals.

Thus, in full freedom of choice, the plan works as a clearing house, not interfering with, but giving effect to the choices of both hospital and student. It has removed, insofar as possible, the great pressures that caused recriminations once common to the internship placement scene. The broken contracts, the pressuring and signing up of students long before the senior year for internship commitments, and other undesirable aspects have now largely disappeared. An overwhelming majority of both students and hospitals felt that the initial matching program was successful. Operational improvements in technics and more complete understanding have followed, and the "matching program" today, has the continued support of hospitals, deans and students.

The matching program does *not* allocate, distribute, or otherwise control interns or internships. It does *not* set quotas or approve hospitals for internship training. It does *not*, by its nature, favor any group of hospitals, or in any way advise students where to intern.

The Student American Medical Association and all other student groups which have studied the matching program endorse it fully. Every medical and hospital organization or committee which has studied the matching program and reviewed its operations have approved it. These include the American Medical Association, the Student American Medical Association, American Hospital Association, Association of American Medical Colleges, Catholic Hospital Association, American Protestant Hospital Association and the National Student Internship Committee.

THE COST OF ATTENDING MEDICAL SCHOOL

In February of 1954, Counts and Stalnaker [12] published an informative statement of the cost of medical education to the student including data as to the sources of student income and the income of their parents. The data were obtained from 6,251 students in 26 selected medical schools. It was found that the average medical student today spends approximately $9,200 during his four years of undergraduate medical education. Furthermore, for the average single student most of the financing came from parents, while in the case of married students the chief source of this support was derived from the earnings of the wife.

For purposes of this report, medical school administrators were requested to estimate the minimum and average financial outlay by their students during the academic year 1953-1954 on the basis of expenditures for tuition, special fees, equipment, books, and essential living costs. Seventy-one schools submitted data indicating that the total annual average expenditure by the student was $2,380. This when multiplied by four gives a total cost of $9,520 for the entire undergraduate period, a figure closely approximating the average determined from the students by Counts and Stalnaker. Minimum costs were reported to average approximately $1,690 per year, or $6,760 for the entire four years.

TABLE 21.—*Comparison of Tuition Fees 1940-1941 with 1953-1954*

	1940-1941	1953-1954	Percentage of Increase
Total number of approved United States schools	76	80	5.3
Number of schools with added fee for nonresident students	28	33	17.9
Average fee for resident students	$391	$633	62
Average tuition fee for nonresident students	$445	$772	76
* Cost of living index (1935 to 1939 = 100%)	103	192	87

* Some additional comparisons involving national aggregates may be helpful. These were derived from publications of the United States Department of Commerce and the United States Department of Labor.

Per capita disposable personal income increased from $633 in 1940-1941 to $1,566 in 1953, or a 147% increase. Per capita personal consumption expenditures increased from $582 in 1940-1941 to $1,452 in 1953, or a 149% increase. The number of weeks' wages of production workers in manufacturing necessary to pay the average fee for resident students decreased from 13.2 weeks in 1941 to 9.3 weeks in 1952, or a decrease of 29.6%. The number of weeks wages of production workers in manufacturing necessary to pay the average tuition fee for nonresident students decreased from 15 weeks in 1941 to 11.4 weeks in 1952, or a decrease of 24.5%.

STUDENT FEES

The average tuition fee during 1953-1954 for students who were residents of the state in which the school they entered was located was $633. The average fee for nonresident students was $772. In computing this latter sum, tuition figures were included for schools that had no differential between resident and nonresident students.

It was thought that it might be of value to present a comparison between tuition fees in 1953-1954 and 1940-1941, just prior to World War II. This material is given in table 21. The average fee for nonresident students presented represents the average for all schools, not just those that have increased fees for nonresident students. The consumer's price index was used for the cost of living index.

Although there have been substantial increases in tuition fees, the increases have been kept significantly less than the increase in the cost of living. There has been a percentage increase in the number of schools charging additional tuition fees for nonresident students and also

12. Counts, S., and Stalnaker, J. M.: The Cost of Attending Medical School, J. M. Educ. **29**: 20-25 (Feb.) 1954.

an increase in the average nonresident fee over and above the increase in average resident tuition.

Data relative to tuition fees for resident students during 1953-1954 and anticipated fees for the same group during 1954-1955 are presented in table 22. In this table, the medical schools of the United States and Canada have been grouped according to the fees charged. The sums represent one-fourth of the total tuition and special fees charged for the four years of the medical course. Fees in 1954-1955 will range from $99 to $1,284, with a median of $715 and an average of $645. The median represents no change from 1953-1954 and the average represents an increase of $12.

SCHOLARSHIP AND LOAN FUNDS IN MEDICAL SCHOOLS

Seventy of the 80 medical schools in the United States reported a total of $1,029,263.27 in scholarship resources available to medical students from funds held by or directly controlled by the school or university during 1953-1954. The average scholarship fund available was $14,704, which represents a definite increase over the $12,014 average indicated by the 62 schools reporting such scholarship funds in 1952-1953. The largest amount reported by any institution was $143,052 and the smallest was $100. One other school reported scholarship funds over $100,000. Thirteen additional institutions indicated scholarship funds in excess of $25,000 for 1953-1954.

TABLE 22.—*Range of Annual Fees in Medical and Basic Science Schools in the United States and Canada*

Fees	1953-1954 No. of Schools		1954-1955 No. of Schools	
	United States	Canada	United States	Canada
Less than $100	1	..	1	..
$100 to 199	3	..	2	..
200 to 299	4	..	3	..
300 to 399	8	3	9	3
400 to 499	12	7	11	7
500 to 599	7	2	8	2
600 to 699	4	..	4	..
700 to 799	7	..	6	..
800 to 899	26	..	21	..
900 to 999	7	..	12	..
1,000 and over	1	..	3	..
Totals	80	12	80	12

Seventy-three of the medical schools indicated total loan funds available for medical students at $2,127,850.40, with an estimated $894,604.50 loaned to their students during 1953-1954. Loan funds varied from a high of $130,617 to a low of $1,437 in different institutions, with an average of $29,148.64 for the group reporting the availability of such funds.

As was indicated in the first résumé on scholarship and loan funds for medical students in the last annual report, there are additional sources of financial aid in the form of resident scholarships from certain states and special subsidies for student residents who agree to locate for practice in small towns or rural areas on completion of their undergraduate medical education and internship. Where interstate cooperative arrangements have been consummated, as in the instance of the Southern Regional Education Board, students receive some assistance through the lower resident tuition rate of the school rather than the augmented out-of-state tuition charged in most state institutions. A somewhat similar program is developing among the Western states and in New England, and consideration is also being given to the possibility of such a program by the states in the Midwest. Such programs are directed primarily, however, toward medical school financing through support by the regional organization to institutions of the difference between tuition and total basic costs of medical education.

Because of the many variables in available student scholarship and loan funds, there is currently no encyclopedic listing of such resources. Students desiring such information should directly contact the medical school concerned in order to determine what forms of aid are available and the conditions under which they are granted.

INTRAMURAL TEACHING RESPONSIBILITIES OF MEDICAL SCHOOLS FOR OTHER THAN UNDERGRADUATE MEDICAL STUDENTS

At the present time there is no single medical school in the United States in which some instruction is not given to students other than those enrolled in undergraduate medical courses. In fact, the number of persons other than undergraduate medical students who receive part or all of their instruction from medical faculties is over twice as great as the total number of undergraduate medical students. During 1953-1954 medical schools reported 59,430 students other than undergraduate medical students. Table 23 has been modified from previously published tables so as to include physicians and graduate students working toward advanced degrees and to eliminate part-time special students working toward M.D. degrees (included in medical school enrollment data, table 1). It is an analysis of the total number and distribution of these students in each of the medical schools. Table 24 vividly illustrates the rapid increase in these additional intramural teaching responsibilities of medical faculties from 17,906 in 1947-1948 to 59,430 in 1953-1954. Canadian medical schools report a gross total of 5,281 students other than undergraduate medical students receiving instruction in their schools in 1953-1954.

Comparison with last year's analysis indicates that there has been an increase in every category of student except for student technicians receiving instruction from medical school faculties and nonphysician graduate students working for degrees in basic medical sciences. Actual numerical increases in students in the various categories were: dental 525; pharmacy 60; nursing 1,594; nonmedical (arts and science) 2,053; physicians working as fellows 30; physicians taking continuation courses 904; interns whose instruction is a primary medical school responsibility 62; residents whose instruction is a primary medical school responsibility 893; and physicians working toward advanced degrees 201. Student technicians decreased 994, and graduate students in the basic medical sciences were 42 fewer than reported the previous year.

Two areas of concern are present in any situation where a medical school faculty is charged with responsibility for teaching students other than undergraduate medical students. One of these lies in the area of interpretation of the actual cost of undergraduate medical education, and the second major concern is associated

TABLE 23.—*Intramural Teaching Responsibilities for Other Than Undergraduate Medical Students, 1953-1954*

School	Dental Students	Pharmacy Students	Nursing Students	Student Technicians	Arts and Science Students	Physicians in Continuation Courses	Physicians Taking Basic Science Courses for Specialty Boards	Physicians with Fellowship Appointments	Interns	Residents	Physicians Seeking Advanced Degrees	Other Graduate Students in Basic Medical Sciences	Totals	M.A. Degrees Granted	Ph.D. Degrees Granted
UNITED STATES															
Medical College of Alabama	98	...	123	46	...	...	7	11	14	70	...	75	394	5	...
University of Arkansas	...	...	...	19	...	147	...	...	12	35	...	9	222	3	1
College of Medical Evangelists	42	...	201	49	...	8	6	4	18	42	...	...	370	...	...
Stanford University	...	...	120	12	...	141	...	26	55	67	1	1	423	1	...
University of California	201	86	214	49	...	916	...	...	57	161	...	24	1,708	10	14
University of Southern California	...	...	...	...	...	379	60	4	135	135	...	45	758	1	10
University of Colorado	...	...	199	...	99	1,232	55	3	48	148	211	32	2,027	24	7
Yale University	...	...	429	...	13	119	...	32	45	69	...	108	815	28	17
George Washington University	...	109	...	7	370	168	...	20	22	35	...	110	841	9	8
Georgetown University	181	...	127	1	...	...	...	10	8	70	13	28	438	18	1
Howard University	99	68	40	14	36	...	...	2	...	...	...	...	259	...	...
Emory University	234	...	40	7	...	167	...	19	34	133	...	10	644	1	2
Medical College of Georgia	...	...	72	2	4	...	...	...	24	47	...	1	150	1	...
Chicago Medical School	...	...	...	...	...	...	...	7	...	...	...	...	7	...	...
Northwestern University	...	...	222	39	3	11	12	...	...	...	26	9	322	15	17
Stritch School of Medicine	...	...	...	...	...	...	...	...	...	...	2	57	59	3	9
University of Chicago	...	...	...	...	...	...	...	21	42	118	5	118	304	8	12
University of Illinois	216	176	...	...	33	64	13	...	24	116	26	67	735	26	11
Indiana University	136	...	535	72	160	383	18	2	15	123	...	9	1,453	...	2
State University of Iowa	110	82	131	82	482	4	25	4	14	128	2	85	1,149	17	13
University of Kansas	...	20	173	49	565	1,726	...	2	26	88	5	10	2,664	6	5
University of Louisville	132	...	95	11	2	320	...	6	22	77	1	15	681	3	...
Louisiana State University	...	...	58	...	...	43	3	1	...	81	...	8	194	...	2
Tulane University	...	...	155	2	13	247	19	56	86	88	19	30	715	...	4
Johns Hopkins University	...	...	248	...	12	17	...	59	...	...	...	5	341	...	1
University of Maryland	...	61	49	8	...	94	82	16	45	85	...	5	445	3	2
Boston University	...	...	72	31	24	...	...	3	...	7	...	51	188	1	8
Harvard Medical School	28	...	...	...	...	388	62	319	...	...	...	47	844	13	7
Tufts College Medical School	270	...	...	...	...	123	...	58	...	...	...	17	468	1	5
University of Michigan	364	31	415	101	566	517	24	...	55	250	21	118	2,462	37	12
Wayne University	...	...	...	17	...	200	...	...	66	125	75	32	515	5	3
University of Minnesota	276	192	181	...	1,634	1,302	...	...	30	125	1,660	140	4,280	72	14
University of Mississippi	...	29	8	...	...	...	...	...	...	...	1	1	39	...	...
St. Louis University	159	...	288	147	...	5	...	...	12	33	7	32	683	4	6
University of Missouri	...	...	45	...	533	4	...	...	...	...	...	13	595	3	4
Washington University	...	...	...	82	27	...	10	44	57	131	...	...	351	2	3
Creighton University	92	...	99	...	6	...	...	...	11	19	19	12	258	10	...
University of Nebraska	36	...	119	30	...	124	...	...	13	39	...	9	370	1	...
Dartmouth Medical School	...	...	138	14	...	1	...	...	16	53	...	...	222	...	...
Albany Medical College	...	...	243	...	1	471	...	...	40	49	...	10	814	...	...
University of Buffalo	122	52	125	...	225	217	...	2	...	...	...	8	751	2	1
Columbia University	75	...	337	...	102	561	32	21	...	...	2	...	1,130	...	...
Cornell University	...	...	320	...	...	21	22	35	...	...	...	21	419	1	4
New York Medical College	...	...	188	...	...	91	...	1	1	23	6	1	311	3	...
New York University	...	...	442	...	146	...	...	60	81	373	...	31	1,133	3	3
State University of New York, New York City	...	...	...	...	...	16	17	...	98	108	4	...	243	...	...
State University of New York, Syracuse	...	...	212	...	...	400	...	...	24	70	...	13	719	...	1
University of Rochester	...	...	269	31	...	...	...	...	52	76	...	96	524	12	19
Duke University	...	...	166	43	...	10	10	33	56	104	...	...	422	...	...
University of North Carolina	127	141	95	18	40	424	...	1	18	55	...	51	970	2	2
Bowman Gray School of Medicine	...	...	181	11	...	...	...	...	8	58	...	6	264	2	...
University of North Dakota	...	...	129	28	27	...	...	...	...	...	...	10	194	3	...
Ohio State University	575	24	336	223	1,160	...	...	...	30	117	...	162	2,627	12	2
University of Cincinnati	...	...	124	3	2	521	...	31	52	122	35	9	899	...	3
Western Reserve University	179	...	198	14	7	84	50	39	...	...	...	33	604	1	4
University of Oklahoma	...	...	220	11	...	508	75	2	29	45	...	35	925	3	1
University of Oregon	...	...	430	...	2	371	...	...	18	74	...	12	907	8	1
Hahnemann Medical College	...	...	117	28	...	...	...	14	10	46	...	5	220	3	...
Jefferson Medical College	...	...	...	...	...	...	45	12	20	57	...	28	162	3	5
Temple University	...	...	266	22	...	42	...	3	18	99	87	2	530	12	...
University of Pennsylvania	136	...	45	...	44	...	...	155	26	189	...	73	668	6	9
University of Pittsburgh	...	...	789	...	...	125	146	...	8	138	...	19	1,225	...	...
Woman's Medical College of Pennsylvania	...	...	50	...	...	...	...	6	1	11	...	...	68	...	...
Medical College of South Carolina	...	55	185	10	12	332	6	14	14	31	...	15	674	5	1
University of South Dakota	...	...	...	...	150	...	...	...	...	...	2	7	159	1	...
Meharry Medical College	26	...	34	17	...	1	...	...	12	21	...	3	114	...	...
University of Tennessee	203	174	200	23	...	121	...	29	...	...	20	43	813	7	5
Vanderbilt University	...	...	...	...	...	38	...	...	24	64	...	14	140	...	...
Baylor University	...	...	...	...	...	3	2	2	66	137	4	20	234	...	...
Southwestern Medical College	...	...	...	...	...	360	...	21	57	157	...	3	598	...	...
University of Texas	...	...	346	30	2	74	...	10	25	117	...	23	627	4	3
University of Utah	...	...	35	10	701	410	...	15	22	84	5	36	1,318	6	...
University of Vermont	...	...	43	13	21	...	...	...	20	21	2	8	128	3	...
Medical College of Virginia	206	218	272	56	59	400	13	5	41	92	...	12	1,374	2	1
University of Virginia	...	...	235	8	...	...	...	16	28	70	2	3	362	2	...
University of Washington	144	65	175	18	2,940	482	11	9	33	67	8	57	4,009	6	11
West Virginia University	...	45	...	24	12	...	...	...	...	...	...	1	82	1	...
Marquette University	227	...	...	...	...	198	...	...	...	...	9	16	450	3	...
University of Wisconsin	...	99	267	417	1,013	184	6	5	10	53	...	74	2,128	9	6
University of Puerto Rico	...	...	13	15	36	...	...	...	12	22	...	...	98	20	...
Totals	4,694	1,727	11,683	1,964	10,684	15,315	831	1,270	1,960	5,439	1,620	2,243	59,430	476	282
CANADA															
University of Alberta	...	...	...	...	...	186	...	...	...	...	1	9	196	4	...
University of British Columbia	...	46	182	26	90	112	14	6	47	58	19	7	607	2	...
University of Manitoba	...	...	350	...	...	60	...	...	61	...	...	...	471	1	...
Dalhousie University	24	14	22	...	35	439	...	...	54	...	10	7	605	2	...
Queen's University	...	...	199	...	109	...	...	...	...	...	5	3	316	...	2
University of Ottawa	...	...	13	...	2	6	...	...	45	...	9	5	80	1	...
University of Toronto	340	92	15	...	707	97	71	57	...	...	49	42	1,470	5	4
University of Western Ontario	...	...	87	...	...	...	...	...	20	19	...	62	188	6	7
Laval University	...	...	...	91	...	8	...	...	...	...	2	3	104	1	4
McGill University	66	...	...	...	...	...	...	...	...	...	167	...	233	14	4
University of Montreal	60	270	...	23	100	...	11	...	96	...	6	17	583	1	3
University of Saskatchewan	...	55	179	...	190	...	...	...	...	...	...	4	428	2	1
Totals	490	477	1,047	140	1,233	908	96	63	323	77	268	159	5,281	39	25

with the potentiality of overburdening faculty personnel and diluting teaching and research activities to the point where either the undergraduate medical student, other students, or both groups may have less effective opportunities than would otherwise be the case. Reasonably careful departmental analysis and institutional bookkeeping should make it possible to differentiate actual cost factors so that the true value of medical faculty services to other than undergraduate medical students may be delineated, and the actual cost of medical education determined in any institution. Too frequently when a medical school renders service functions to large numbers of students in other areas either no adjustment or a nominal financial adjustment is made, ostensibly to pay for such services. Frequently such reimbursements fall far short of the actual cost of the services rendered and leave the medical school underwriting the difference with this additional load interpreted by the uninformed as part of the cost of medical education. This problem appears to fall in the area of budget and accounting practices of medical schools and universities. The true cost of educating undergraduate medical students in a complex university setting or wherever others are also taught by the school can only be determined by utilizing effective budget and accounting methods.

The question as to whether teaching responsibilities for other than undergraduate medical students may unduly dilute either teaching or research, or both, is a matter of local institutional policy. If a medical school administration is fully aware of the implication of additional teaching services from the standpoint of budget, personnel and facilities and such needs are satisfied, there is no logical reason why either teaching or research in medicine should be diluted in any sense. In fact, with adequate budgets, personnel and facilities, departments of basic medical science carrying such responsibilities may possess even greater potential in both teaching and research than would be the case if their activities were restricted solely to undergraduate medical students and to graduate students in their specific fields.

A glance at table 24, which summarizes the intramural teaching responsibilities of medical schools for other than undergraduate medical students since 1947-1948, highlights a point that is frequently overlooked by those who have discussed and written of this development. With the exception of the 44,080 nonmedical (arts and sciences) students who received some instruction in medical schools during this period, all of the remaining 254,458 persons were students in some phase of graduate or postgraduate medical education or in some field such as dentistry, pharmacy, nursing, or technology. There can be little doubt in the mind of anyone giving serious thought to this matter but that graduate and postgraduate education fall within the logical area of responsibility of medical schools if they are adequately covered as far as budget, personnel, and facilities are concerned. Physicians enrolled in continuation courses, in basic medical science courses preparing for specialty boards, fellows, interns, residents, or persons working for advanced degrees in the basic medical sciences account for 182,468 registrations out of the total during this period.

Where basic medical science and clinical instruction is needed in such fields as dentistry, pharmacy, nursing, and technology, 73,508 persons have received part of their instruction from the faculties of medical schools during the past seven years. There can be no question of the importance of sound indoctrination in the basic medical sciences required in each of these fields. Since these areas of activity are so inextricably interwoven with the over-all field of medical care, it does not seem unreasonable that medical schools should engage in such instructional responsibilities, provided that wherever they are conducted provision is made for adequate budgets, personnel, and facilities, as well as budgeting and accounting practices that accurately delineate the cost factor in each area of activity.

TABLE 24.—*Intramural Teaching Responsibilities for Other Than Undergraduate Medical Students, 1947-1954*

Year	Dental Students	Pharmacy Students	Nursing Students	Student Technicians	Arts and Science Students	Physicians in Continuation Courses	Physicians Taking Basic Science Courses for Specialty Boards	Physicians with Fellowship Appointments	Interns	Residents	Physicians Seeking Advanced Degrees	Other Graduate Students in Basic Medical Sciences	Totals	M.A. Degrees Granted	Ph.D. Degrees Granted
1947-1948	*	*	*	*	478	13,187	2,338	*	*	*	813	1,090	17,906	*	*
1948-1949	*	*	*	*	2,039	15,695	1,697	*	*	*	1,133	1,765	22,329	*	*
1949-1950	*	*	*	*	2,720	17,930	1,087	1,135	1,960	4,345	1,125	2,094	32,396	*	*
1950-1951	3,854	2,497	9,195	1,402	9,838	17,654	1,152	1,238	1,786	4,259	1,561	2,720	57,156	*	*
1951-1952	4,626	2,042	9,629	1,312	9,690	15,829	978	1,204	1,576	4,211	1,905	2,310	55,312	*	*
1952-1953	4,169	1,667	10,089	2,958	8,631	14,401	706	1,240	1,898	4,546	1,419	2,285	54,009	502	258
1953-1954	4,694	1,727	11,683	1,964	10,684	15,315	831	1,270	1,960	5,439	1,620	2,243	59,430	476	282
Total	17,343	7,933	40,596	7,636	44,080	110,011	8,789	6,087	9,180	22,800	9,576	14,507	298,538	978	540

* Figures not available

CURRENT STATUS OF MEDICAL EDUCATION AND NATIONAL DEFENSE

Medical Education for National Defense.—The Joint Committee on Medical Education in Time of National Emergency, representing the Council on Medical Education and Hospitals of the A. M. A. and the Association of American Medical Colleges, has continued to collaborate closely with the Department of Defense, the armed forces, the Selective Service System, the Public Health Service, the Civil Defense Administration, and other governmental agencies in dealing with problems created for medical education by the continuing defense needs of the nation. Such coordination of effort continues to be of

material assistance in the development of programs and policies designed to deal with these problems.

A program for medical education for national defense (MEND) has been a successful experiment in the five institutions (Buffalo, California, Cornell, Illinois, and Vanderbilt) in which it was instituted two years ago. At the outset it was agreed[13] that: 1. Each of the schools in the pilot group should be free to work out its own program in light of the circumstances prevailing in that institution. 2. The individual programs should be developed through the faculties of the respective institutions. 3. The programs should be designed to stimulate the students and to create appropriate attitudes as well as to teach appropriate material. 4. Emphasis should be placed on professional topics. 5. The programs should be evaluated as critically as possible.

At the conclusion of the first year, the MEND program committee felt that: 1. There appeared to be a well-defined and recognized need for modification of medical curricula to make medical graduates better able to cope with medical problems encountered in disaster and war. 2. The underlying philosophy of the MEND pilot programs is consistent with sound concepts of medical education. 3. The acceptance by faculties, student bodies, representatives of the armed forces, and the Public Health Service of the MEND program had been favorable. Conduct of the program was made possible through federal grants of approximately $15,000 annually to each of the participating institutions to support the program coordinator, defray travel and other expense.

The A. M. A. has endorsed the MEND program as it has been operated in the five pilot schools and has adopted the recommendation of the Council on Medical Education and Hospitals that it be made available to all medical schools on a voluntary basis. Similar endorsement of the program has been given by the Association of American Medical Colleges on the recommendation of their Committee on National Emergency Planning.

Selective Service System and Deferment Eligibility.—With the exception of minor changes, Selective Service System regulations remain essentially unchanged. The responsibility for the primary classification of registrants rests with the Selective Service local boards. If a person or his employer (college, medical school, or hospital) has requested his deferment and he has been classified as available for military service, then the person or his employer may, within 10 days of the mailing of the classification, file an appeal. If the State Appeal Board should sustain the classification, the registrant or his employer may, if there is a dissenting vote in the appeal board, file a written request with the local board to have the decision appealed to the National Selective Service Appeal Board. If there is no dissenting vote, the state or national director of Selective Service may appeal the case to the President.

The "college student certificate," SSS form 109, has been prescribed for the use of institutions of higher learning, including those of medicine, in furnishing the local boards information regarding registrants who are enrolled as students in those institutions. These forms should be submitted to the local boards by the educational institution on request of the registrant. However, the mere filing of such a form does not constitute a request for occupational deferment since, in order to establish the right of appeal as an interested party, a written request from the college or employer for occupational deferment must accompany the form. The registrant has the right of appeal if exercised in the prescribed 10 days. He can make his appeal informally in writing.

Eligibility for Consideration for Deferment: The law states that the President may provide for the deferment of any person whose deferment is equitable and in the national interest. He is also informed that it is the sense of the Congress that provision should be made for the annual deferment from training and service of premedical, predental, and allied preprofessional students in numbers equal to those at present in attendance at colleges and universities. This is provided in the general student deferment program. The President is also directed to establish a national advisory committee to advise the Selective Service System and aid state and local advisory boards in selecting the needed medical, dental, and allied personnel.

The conditions under which students pursuing programs of higher education may be considered for deferment are specified in sections 1622:15 and 1622:25 of the Selective Service Regulations. Within the specified requirements, students of the healing arts are to be considered for deferment in the same manner as students pursuing other undergraduate or graduate courses at colleges, universities, etc.

Any student not previously deferred who is pursuing a full-time course of study is entitled to a single period of statutory deferment, class 1-S, until the end of the academic year. Such deferment does not preclude the possibility of later deferment in class 2-S. Students whose activity in study, research, medical, or other endeavors is found necessary to maintenance of the national health, safety, or interest may be deferred in class 2-S until completion of their training, provided they maintain satisfactory scholastic records. A student who is deferred for study extends his liability for military training and service up to his 35th birthday instead of his 26th, as prescribed for registrants who have never enjoyed a deferment.

In selecting a student for deferment in class 2-S, the Selective Service local boards may, at their discretion, be guided either by the score made by the student on the Selective Service College Qualification Test, or by his record of academic performance.

The College Qualification Test is given for the Selective Service System by the Educational Testing Service of Princeton, N. J. At present, in order to be eligible for deferment on the basis of this test, an undergraduate student must make a score of 70 or more. SSS form 108 has been prescribed for furnishing to the local board the score made on the test. This score is confidential and may be divulged by the local board only to the registrant or one holding his written consent.

To qualify for deferment on the basis of academic performance, the nonprofessional student must have maintained the following standing among the male members of his class: freshman year, upper one-half; sophomore year, upper two-thirds; junior year, upper three-fourths.

13. Olson, S. W.: Medical Education for National Defense, J. M. Educ. **29**: 15-22 (Jan.) 1954.

A student accepted for admission to medical school after July 1, 1951, for the class next commencing may be deferred provided that during his last full-time year at a college or university he was ranked among the upper one-half of the male members of his class or had a score of 70 or more on the Selective Service Qualification Test.

A student accepted for admission by a graduate school after July 1, 1951, as a full-time student for the class next commencing may be deferred provided in his last full time academic year in a college or university he achieved a scholarship standing among the upper one-half of the male members of his class or scored 75 or more on the qualification test, and provided the graduate school certifies that he is meeting the degree requirements.

Decisions concerning deferment of American students enrolled in foreign universities, including medical students, are the responsibility of the local boards. The local board may accept or reject any claims or evidence presented for deferment.

Status of Interns and Residents: The Selective Service System has always recommended the deferment of graduates of medicine to complete one year of internship training. Recently, and in order to prevent calling up men of priority 3 who are in the higher age brackets, Selective Service has stated that men to be given favorable consideration for deferment to complete a residency or more than one year of internship, should be absolutely essential to the operation or maintenance of the hospitals where they are employed. Selective Service is of the opinion that there is a sufficient number of priority 4 young men to fill the needs of hospitals for residents.

The National Advisory Committee to the Selective Service System has indicated that all physicians in priority 1 and priority 2 and those in priority 3 born after Aug. 30, 1922, will be needed by the armed forces and has advised that they apply for commissions about the time of completion of their internships. A few persons in these categories may be recommended for deferment by the Selective Service local boards for teaching, research or public health, or because they are rendering essential service in isolated communities and cannot be replaced.

In addition, the only persons in this group who can justifiably be recommended for deferment are those who are accepted for training in the scarcity specialties and whose services are required to meet the essential needs of medical and dental schools or hospital services. The specialties in which critical shortages exist are anesthesiology, physical medicine and rehabilitation, psychiatry, radiology, neurology, pathology, public health, orthopedic surgery, oral surgery, and the basic medical sciences. Those few persons in these groups for whom deferment is necessary may be deferred in class 2-A by the Selective Service local boards. The recommendation of the advisory groups in all such cases is desirable.

Status of Faculty Members: Since the majority of the faculty members of medical schools are under 50 years of age, they are required to register with the Selective Service System as indicated under Public Law 779. No policy has been announced by the Selective Service System on the granting of deferment to faculty members. However, the National Advisory Committee has recommended that, as a general policy, essential members of medical, dental, and veterinary medical faculties be held in their teaching positions until such time as replacements are found. This recommendation applies especially to persons in the basic science departments and includes persons in priorities 1 and 2. This policy is not a blanket recommendation for deferment from military service for all teachers. Part-time teachers, who devote only a small portion of their time to teaching, and certain of the younger full-time teachers in priorities 1 and 2 will be expected to enter the military services.

Status of the "Doctor-Draft" Law of 1953: Public Law 84, 83rd Congress, approved by the President, June 29, 1953, amended the Universal Military Training and Service Act. It, and the previous amendment, Public Law 779, 81st Congress, are known as the "Doctor-Draft" law.

The effective date of the whole Universal Military Training and Service Act, as now amended, is extended to July 1, 1955. No change was made in the age limit prescribed in the previous amendments, which required that all physicians, dentists, and allied specialists, under the age of 50, must register with their Selective Service local boards, when required to do so by proclamation of the President. These special registrants remain liable for induction up to the age of 51. Therefore, all new medical graduates under the age of 50 must register with their Selective Service local boards as physicians, regardless of any previous registration, within five days of the receipt of the degree of Doctor of Medicine, provided they do not hold a commission in an armed forces reserve. When the degree is not granted until the completion of an internship, this special registration is accordingly deferred.

As under previous provisions of the act, registrants will be arranged in four priorities signifying the order of induction. However, the criteria for such an arrangement under these priorities have been modified. The major changes enacted by the new amendments are those which provide for greater recognition of prior military service. A registrant will now receive credit for all service performed either as an officer, or as an enlisted man, since Sept. 16, 1940, regardless of whether it was before or after participation in an AST or V-12 program, or deferment by the Selective Service System for professional education prior to March 31, 1947. Also, recognition is given for military service performed in the armed services of a country allied with the United States prior to Sept. 2, 1945, while so allied.

Whereas, formerly physicians who were educated in part, or in whole, at government expense, or were deferred by the Selective Service System while completing their professional education, needed 21 months of service to qualify for assignment in priority 4, they now need only 17 months. As a result of this change, a number of physicians formerly in priorities 1 and 2 have been reassigned in priority 4. The periods of service for men called to active duty or inducted under the new law were also revised. Those with 9 months or less of service must serve 24 months. Those with 9 to 12 months will serve 21 months. Those with 12 to 15 months service will serve 18 months, and those with 15 to 21 months service will serve 15 months. Those physicians in priority 4 who have had 21 months or more of service since Sept. 16, 1940, are no longer liable to induction or recall, except in time of war or national emergency declared by Congress.

"Active service" and "active duty" are defined as full-time duty since Sept. 16, 1940, in the service of the United States Army, Navy, Marine Corps, Coast Guard or Public Health Service, including reserve components; time spent during World War II, by conscientious objectors, in work of national importance, service performed before Sept. 2, 1945, in the armed forces of countries that were allies of the United States during World War II and service performed as a physician or dentist for the Panama Canal Health Department between Sept. 16, 1940, and Sept. 2, 1945.

Specifically excluded from consideration as "active service" is time spent in V-12 or AST programs, in military internships, residencies or senior student programs, time spent in military service for the sole purpose of undergoing physical examination, and training entered into after June 29, 1953. The law continues to permit deferment of those persons whose activities are essential to the national health, safety, or interest.

It is the duty of the National Advisory Committee and the voluntary state and local committees of the Selective Service System to make recommendations to the Selective Service System concerning the essentiality or availability of special registrants who are being classified by their local boards. This duty includes recommendations concerning residents, faculty members, and those engaged in essential laboratory and clinical research.

The latest amendment made to the basic "Doctor-Draft" act was Public Law 403, approved June 18, 1954. This amendment makes it possible for the armed services to retain on duty, but in enlisted status, persons serving under the "Doctor-Draft" act whose loyalty is questioned, or for security reasons. This amendment, therefore removed the mandatory requirement that physicians and dentists be given commissions.

Status of Medical Military Scholarships.—During recent years suggestions have been made in regard to the possible development of military medical scholarships with the objective of training career personnel. Initial proposals have differed from some earlier suggestions in that the plans are not primarily to provide aid to needy students enrolled in all schools but represent a means of subsidization of a number of students in return for a pledge to serve after graduation in military establishments. It is a business proposition between the student and the armed services. The A. M. A. has recommended that the establishment of such scholarships be endorsed providing the following safeguards are imposed: (1) that the student be not approached until he has fully matriculated in the medical school; (2) that the student not expect nor receive special consideration so far as meeting the required standards of scholarship, behavior, and ethics are concerned and that failure in these areas shall automatically terminate the scholarship arrangement with the student; and (3) that the total number of students on such scholarships in any year's class in all of the schools and the number in a class in a single school not exceed 5%. It is believed that any act creating such scholarships should have a reasonable "escape" clause satisfactory to the student and to the military authorities if circumstances warrant. To the date of publication no concrete proposal has been presented to Congress for establishment of such scholarships.

Foreign Medical Schools and Students

FOREIGN STUDENTS IN MEDICAL SCHOOLS IN THE UNITED STATES

Much attention has been given of late to graduates of foreign medical schools seeking licensure to practice in this country and also to American citizens studying medicine in foreign schools. Little note has been taken of the fact that the educational facilities in the United States are contributing significantly to the medical education of citizens of foreign countries.

In 1953-1954 there was a total of 348 foreign citizens enrolled as students in 53 medical schools in the United States. These were fairly evenly distributed with 101 in the first year class, 104 in the second, 78 in the third, and 65 in the fourth year class. The highest enrollment in any of the schools was 34, and the average for schools having foreign students in attendance was 6.6. Fourteen schools had foreign students in all four classes and three schools had foreign students in only one class.

During the same period, according to data reported by the Health Resources Advisory Committee, there were 5,589 noncitizens serving as interns, residents, or house officers in approved hospitals in this country. It is unfortunate that exact information is not available as to how many of both of these groups are here on student visas with the obligation of returning to the country of origin on the completion of their study, for this would more accurately reflect the contribution of our educational system to foreign medicine than do total numbers.

AMERICAN STUDENTS IN FOREIGN MEDICAL SCHOOLS

In the reports on medical education for the two preceding years, statistics were given on the number of citizens of this country who were studying medicine abroad. A serious effort was made to collect such information again so that it could be included in this report.

Unfortunately, the returns to date of the inquiries sent to foreign medical schools and other informed agencies are not sufficient to provide a reliable over-all view. The data on hand do not indicate any major change from last year, but because they are so incomplete, valid observations could not be drawn from them. Every effort shall be made to obtain a broad base of information for the next annual report.

Students who plan to study medicine abroad are also cautioned to determine whether or not the credentials that they may obtain will be recognized in this country. It is apparent that many of these students have not fully informed themselves concerning the educational standards of foreign schools. While there are many such schools whose excellence is rather widely recognized in the United States, there are others whose credentials may not be accepted by the licensing authorities. Students who are planning to study medicine abroad are therefore urged to communicate directly with the licensing boards of states where they hope to practice and to determine in advance of enrollment whether or not the credentials that they may receive will be acceptable.

The Council has prepared a compendium of information on foreign medical education and the status of foreign medical credentials in the United States. Reprints of this publication will be furnished on request, without charge.

FOREIGN MEDICAL SCHOOLS

In February, 1950, the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges first published a list of foreign medical schools whose graduates they recommend for consideration on the same basis as graduates of approved medical schools in the United States. This list is intended as a guide for institutions and organizations in this country who deal with foreign medical graduates and also as an aid to American students who plan to study medicine abroad.

No foreign medical school can be included in the list solely on the basis of information furnished to the two councils by the school itself, by its graduates, or by any foreign government or agency. The data upon which evaluation of foreign schools are based are obtained largely from recognized American medical educators known to both councils who, while traveling abroad, are able to visit foreign medical schools. The councils do not maintain a staff to carry out such visits, nor can they accept from foreign schools that desire inclusion in the list offers to subsidize inspections by representatives of the councils. In evaluating information about

TABLE 25.—*Foreign Medical Schools*

List Prepared by the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges

On the basis of information presently available, the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges are of the opinion that medical institutions and medical organizations in the United States would be justified in considering current and past graduates of the following foreign medical schools on the same basis that they consider graduates of approved medical schools in the United States.

Belgium

Free University of Brussels Faculty of Medicine
(Université Libre de Bruxelles Faculté de Médecine)
Catholic University of Louvain Faculty of Medicine
(Université Catholique de Louvain Faculté de Médecine, or
Katholieke Universiteit te Leuven)
University of Ghent Faculty of Medicine
(Universiteit te Gent Faculteit der Geneeskunde, or
Université de Gand Faculté de Médecine)
University of Liège Faculty of Medicine
(Université de Liège Faculté de Médecine)

Brazil

University of São Paulo Faculty of Medicine
(Universidade de São Paulo Faculdade de Medicina)

China

Peiping Union Medical College

This recommendation applies to all those graduates who were granted the degree of Doctor of Medicine from the date when the first degrees were conferred in 1924 until and including the class of 1943. The education of students in the last class, that of 1943, was interrupted by World War II; therefore, some students finally completed their studies as late as 1949. However, their diplomas were issued as of the class of 1943. Following the Communist conquest of China the name of this school was changed to the China Union Medical College. The recommendation does not apply to this school.

Denmark

University of Copenhagen Faculty of Medicine
(Kobenhavns Universitet Laegevidenskabelige Fakultet)

Finland

University of Helsinki Faculty of Medicine
(Helsingfors Universitet Medicinska Fakulteten)
Medical Faculty Turku University
(Turun Yliopiston Laaketieteellinen Tiedekunta)

Lebanon

American University of Beirut School of Medicine

Netherlands

University of Amsterdam Faculty of Medicine
(Universiteit van Amsterdam Geneeskunde Faculteit)
State University of Groningen Faculty of Medecine
(Rijks-Universiteit te Groningen Geneeskunde Faculteit)
State University of Leiden Faculty of Medicine
(Rijks-Universiteit te Leiden Faculteit der Geneeskunde)
State University of Utrecht Faculty of Medicine
(Rijks-Universiteit te Utrecht Faculteit der Geneeskunde)

Norway

University of Oslo Faculty of Medicine
(Kongelige Frederiks Universitet Medisinske Fakultet)

Sweden

Royal Charles University Medical Faculty, Lund
(Kungl. Karolinska Universitetet Medicinska Fakulteten)
Charles Medico-Surgical Institute, Stockholm
(Karolinska Mediko-Kirurgiska Institutet)
Royal University of Uppsala Medical Faculty
(Kungl. Universitetet i Uppsala Medicinska Fakulteten)

Switzerland

University of Basel Faculty of Medicine
(Universität Basel Medizinische Fakultät)
University of Bern Faculty of Medicine
(Universität Bern Medizinische Fakultät)
University of Geneva Faculty of Medicine
(Université de Genève Faculté de Médecine)
University of Lausanne Faculty of Medicine
(Université de Lausanne Faculté de Mèdecine)
University of Zurich Faculty of Medicine
(Universität Zurich Medizinische Fakultät)

The recommendation with respect to the following medical schools in Switzerland applies only to those graduates of Swiss medical schools who hold the Swiss Federal Diploma issued by the Federal Department of the Interior (Eidgendoissisches Department Des Innern, Département Féderal de L'Intérieur) and obtainable only by Swiss citizens who hold the Certificate of Medical Studies (Akademische Zeugnis, Certificat d'Études Médicales), or who hold one of the following certificates which the Swiss Universities issue to those, not citizens of Switzerland, who complete a course of study and pass examinations equivalent to those taken by Swiss citizens in qualifying for the Swiss Federal Diploma:

University of Basel—Academic Certificate on passing the medical examination for physicians (Akademische Zeugnis über die bestandene Fachprufung für Ärzte).

University of Bern—Medical diploma on passing examination for medicine (Aerztliches Fakultats diplom über die bestandene Fachprufung für Ärzte).

University of Geneva and University of Lausanne—Certificate of Medical Studies (Certificat d'Études Médicales).

University of Zurich—Medical diploma for Foreigners (Medizinisches Diplom für Ausländer).

United Kingdom

England

University of Birmingham Faculty of Medicine
University of Bristol Faculty of Medicine
University of Cambridge Faculty of Medicine
University of Durham Medical School, Newcastle-upon-Tyne
University of Leeds Faculty of Medicine
University of Liverpool Faculty of Medicine
University of London †
University of Manchester Faculty of Medicine
University of Oxford Faculty of Medicine
University of Sheffield Faculty of Medicine

Northern Ireland

Queen's University of Belfast Faculty of Medicine

Scotland

University of Aberdeen Faculty of Medicine
University of Edinburgh Faculty of Medicine
University of Glasgow Faculty of Medicine
University of St. Andrews Medical School, St. Andrews and Dundee

Wales

Welsh National School of Medicine, University of Wales, Cardiff

The recommendation applies only to those physicians trained in the United Kingdom who hold medical degrees from the universities listed. The recommendation does not apply to those physicians who received their medical training at these universities or their affiliated hospital medical schools but who obtained their qualifications through the examinations of the licensing corporations of the United Kingdom. It must be observed, however, that registration in the United Kingdom is granted equally to physicians holding the diplomas of the licensing corporations and to physicians holding university medical degrees.

† Work for the medical degree of the University of London is offered at the following hospital medical schools:

Charing Cross Hospital Medical School
Guy's Hospital Medical School
King's College Hospital Medical School
London Hospital Medical School
Middlesex Hospital Medical School
Royal Free Hospital School of Medicine
St. Bartholomew's Hospital Medical College
St. George's Hospital Medical School
St. Mary's Hospital Medical School
St. Thomas' Hospital Medical School
University College Hospital Medical School
Westminster Hospital Medical School

foreign medical schools, the councils are advised by the Advisory Committee on Foreign Medical Credentials, which is a committee composed of a large group of outstanding individuals representing medical education, educational foundations, licensing bodies, various government agencies, and other organizations interested in the problems of foreign trained physicians.

The list is acknowledged to be a tentative one and the position of the councils with respect to schools not named in the list is that they neither approve nor disapprove of them. Therefore, the credentials of graduates of schools not named in the list must be evaluated by those other agencies, organizations, or institutions to whom these individuals apply for recognition. The 50 foreign medical schools now included in the list are given along with certain qualifying statements in table 25.

The Council on Medical Education and Hospitals, with the cooperation of certain other interested organizations, is currently making an intensive study of all aspects of the problem presented by the many foreign trained physicians seeking licensure in this country. Although the program as it currently exists remains in effect, other methods of dealing with this problem will be given serious consideration during this course of study.

Postgraduate Continuation Courses for Physicians

This section is devoted to an analysis of the postgraduate courses offered in the United States during the period from July 1, 1953, to June 30, 1954. It will also deal briefly with some of the recent developments of unusual interest. The Council has long been interested in postgraduate medical education and for the past 18 years has published semiannually in THE JOURNAL a list of courses available in the United States. The current listing, which covers courses offered from July 1, 1954, to Jan. 15, 1955, was published in the June 12, 1954, issue of THE JOURNAL and is available in reprint form. The next listing will cover the period from Jan. 16, 1955, to Aug. 31, 1955. Following this list, all future postgraduate course listings by the Council will appear annually and will cover a period roughly corresponding to the academic school year, i. e., Sept. 1 through Aug. 31 of each year. It is expected that the first such annual listing will be published sometime during the summer of 1955.

The data presented in this section have been derived from forms submitted by the numerous institutions and organizations offering postgraduate courses. Inasmuch as forms are only sent to those who are definitely known to have postgraduate programs, it is realized that some organizations inaugurating new programs last year may not have been included. All such groups are urged to notify the Council so that they may be placed on the mailing list in order to be considered for inclusion in next year's listing.

The courses discussed in this section are of variable length, subject, and objective. Although most of them are strictly postgraduate in nature, a number include basic science and other courses intended to prepare physicians in part for certification by the American boards in the specialties. At the present time no attempt to distinguish such courses has been made. However, with the publication of the first annual listing, all courses of this nature that have formerly been included in the postgraduate list, will be distinguished as "graduate courses."

In December, 1952, the House of Delegates of the A. M. A. adopted the following definitions submitted by the Council on Medical Education and Hospitals covering medical education beyond the internship:

> Graduate medical education consists of those programs pursued by individuals possessing the degree of Doctor of Medicine which are primarily designed to prepare them for entrance into a specific field of medicine. Such programs include all specialty training as well as academic work in the clinical and basic medical sciences, and may lead to board certification or an advanced academic degree. Graduate programs are usually conducted on a full time basis over a period of from one to several academic years. They are generally of a formal nature as residencies, fellowships, preceptorships or intramural academic work and are generally conducted by medical schools, hospitals, or graduate medical schools.
>
> Postgraduate medical education consists of those educational activities engaged in by individuals possessing the degree of Doctor of Medicine which are primarily designed to keep them abreast of their own particular field in medicine. Such activities are intended to both refresh the individual in various aspects of his basic medical education and inform him of the new developments within his field, and do not lead to any formal advanced standing in the profession. Postgraduate programs may be on a full or part-time basis, but are usually of relatively short duration, i. e., days to months. The organization of these programs may be formal or informal, more often the latter. They are conducted in a great variety of forms using many methods and technics. They are sponsored by a diverse group of institutions, schools, and organizations. Postgraduate programs may also include special training in very narrow fields of medicine such as subspecialties and new areas of study, as well as short basic science courses.

Future annual listing of postgraduate and graduate courses by the Council will distinguish all courses on the basis of the above definitions.

Courses Offered in 1953-1954.—For this discussion all postgraduate courses have been placed in one or another of three general groups. The first includes short courses of less than five days' duration and will be referred to throughout simply as short courses. The second group includes courses of five days' duration or longer, and will be referred to as long courses. The third group will be referred to as miscellaneous courses and includes clinical conferences, graduate assemblies, seminars, study and circuit courses, and other postgraduate activities.

Total Course Offerings and Attendance.—During the year 1953-1954 there were a total of 1,684 courses offered in the United States. It will be seen from table 26 that this represents approximately a 22% increase over the number of courses offered last year. Most of this increase was accounted for by the greater number of long courses of five days' duration or more. Although there was a moderate increase in the number of short courses offered, the miscellaneous group actually decreased markedly in number. It is interesting to note that the previous moderate decline in the total number of courses offered in 1952-1953 apparently is not continuing into a full scale downward swing. During the year 150 long courses were cancelled, but only a few of the short and miscellaneous courses were withdrawn.

Table 26 also gives the attendance figures for the various groups. Short courses showed a marked rise in total attendance over the previous year, whereas long courses had dropped in attendance in this period despite the increase in offerings. Of unusual interest is the marked increase in attendance among the miscellaneous group despite the reduction in opportunities of this type. A total registration of 77,017 physicians was reported for about 95% of the courses. The remaining courses did not report attendance. Data are not available from which it is possible to determine the number of physicians who enrolled in multiple courses. Without such knowledge it is impossible to determine what percentage of the total physician population enrolled in continuation courses during the past year. Nevertheless, the total registration in such courses during 1953-1954 indicates the need and augmented demand for postgraduate study.

Distribution of Postgraduate Courses by State.—All but 10 of the states reported some form of postgraduate courses during the year. There is evidence to indicate that even these 10 states had some postgraduate opportunities within their borders, but information of such nature as to make it possible to include these in this report are not available. Table 27 indicates the concentration of postgraduate opportunities in a few states to be evident from the fact that 1,290 or 76.5% of the total 1,684 courses offered were in either California, Illinois, Massachusetts, Michigan, New York, or Pennsylvania. New York led all other states in total number of courses offered, and this was also true for long courses taken separately. However, Illinois led the field for short courses and Michigan for the miscellaneous group. Short courses were offered in all but 14 of the states, long courses in all but 15, and miscellaneous courses in all but 16.

TABLE 26.—*Postgraduate Courses Offered and Attendance, 1945-1954*

	Short Courses of Less Than Five Days' Duration		Long Courses of Five or More Days' Duration		Miscellaneous Clinical Conferences, Graduate Assemblies, Study and Circuit Courses and Seminars		Total Courses and Attendance	
Year	Total Courses	Attendance	Total Courses	Attendance	Total Courses	Attendance	Total Courses	Attendance
1945-1946..	154	4,140	1,070	19,991	52	21,824	1,276	45,955
1946-1947..	239	16,274	1,291	23,062	21	20,475	1,551	59,811
1947-1948..	496	31,569	1,279	24,878	25	26,356	1,800	82,803
1948-1949..	304	16,821	1,074	28,507	67	38,058	1,445	83,386
1949-1950..	161	10,523	1,080	24,087	129	40,708	1,370	75,318
1950-1951..	420	7,438	1,067	14,890	79	23,855	1,566	46,183
1951-1952..	206	7,454	1,543	17,511	120	40,970	1,869	65,935
1952-1953..	324	9,452	805	23,793	253	31,363	1,382	64,608
1953-1954..	343	14,212	1,185	16,908	156	45,897	1,684	77,017
Totals	2,647	117,883	10,394	193,627	902	289,506	13,943	601,016

Arrangement and Duration of Courses.—Table 28 shows that 616 or 35.6% of all courses offered were part-time courses, the remaining majority being full time. Practically all of the miscellaneous group were of the full time type, as were 78% of the short courses. However, only a little over 54% of the long courses were full time. Short courses ranged in duration from three hours to four and a half days, and among the part-time group some included 30 hours of instruction extending over 15 weeks. Long courses ranged from five days to three years. The miscellaneous group ranged from one hour to two years with varying total durations. Many of the courses in all three groups had variable time arrangements, and still others could be arranged to suit the requirements of the student. Many courses were offered repeatedly during the year, especially among the long group. Courses were offered in every month of the year, the fall and spring being especially popular seasons for all types of courses. Most of the courses in all groups were open to all physicians, only a few being restricted to specialists.

Facilities, Faculty, and Methods Employed.—Facilities in which instruction took place varied considerably. Hospitals, medical schools, or postgraduate medical schools were the most frequent sites for training in all types of courses. However, clinics, hotels, and other facilities were used entirely or in part for many courses. In most cases, some combination of these various facilities was employed.

TABLE 27.—*Postgraduate Courses by State, 1953-1954*

State	Short Courses	Long Courses	Miscellaneous Courses	All Courses
Alabama	1	3	17	21
Arizona	1	..	1	2
Arkansas	8	..	..	8
California	40	18	15	73
Colorado	7	5	2	14
Connecticut	2	11	3	16
Delaware	1	..	1	2
District of Columbia	3	5	1	9
Florida	7	2	2	11
Georgia	5	9	1	15
Illinois	81	211	4	296
Indiana	1	2	3	6
Iowa	28	1	2	31
Kansas	11	1	1	13
Louisiana	4	14	2	20
Maryland	6	12	1	19
Massachusetts	8	59	1	68
Michigan	6	86	31	123
Minnesota	19	10	1	30
Mississippi	..	1	2	3
Missouri	1	3	1	5
Nebraska	1	..	1	2
New Jersey	..	2	..	2
New Mexico	..	..	1	1
New York	16	616	17	649
North Carolina	5	8	9	22
Ohio	24	13	2	39
Oklahoma	5	5	8	18
Oregon	1	4	..	5
Pennsylvania	10	65	6	81
South Carolina	3	..	3	6
South Dakota	..	1	..	1
Tennessee	11	1	4	16
Texas	12	1	5	18
Utah	3	3	1	7
Vermont	2	2	..	4
Virginia	7	1	..	8
Washington	1	5	4	10
Wisconsin	2	4	1	7
Puerto Rico	1	1	2	4
Totals	343	1,185	156	1,684

The majority of the instructors were drawn from the ranks of medical school faculties, but a significant amount of teaching was contributed by physicians without medical school appointments. Most of the instruction within a state was given by faculty derived from within the same state, but a sizable number of instructors were brought in from other states. This was true in the case of states with medical schools as well as those without schools.

Instruction was reported to be purely didactic in about a quarter of the courses of all types, and purely clinical in a slightly smaller proportion of courses. The remainder were reported as employing both didactic and clinical methods.

Content of Courses.—Courses were offered in 59 different subjects that covered practically all fields of medi-

cine to a greater or lesser degree (see table 29). Courses in surgery were more numerous than any other single subject, accounting for 13% of all offerings. General medicine, obstetrics and gynecology, neuropsychiatry, ophthalmology and otolaryngology, and cardiovascular diseases followed in order. Surgery was the most frequent subject for both short and long courses, but general medicine led in the miscellaneous group.

Sponsorship and Financing of Postgraduate Courses.—Practically every four year medical school in the country, with few exceptions, offered or took part in some postgraduate activities during the year. In addition, a large number of individual hospitals and clinics offered courses. Numerous state and county medical societies, as well as a number of national, regional, state, and local specialty societies offered or sponsored courses in their areas of interest. Several health departments and a number of federal agencies offered programs, in addition to some voluntary health agencies and miscellaneous groups, such as study clubs and some departments of general universities.

Fees ranged from $5 for some short courses to over $1,000 for some long courses. Although a number of short and miscellaneous courses charged no fee at all, very few of the long courses were without a fee. In at least one case, a fellowship stipend was offered to a student taking the course. It was not unusual for fees to vary for residents and nonresidents in which a state-owned medical school offered the course, as was also the case with members and nonmembers of some medical organizations sponsoring courses. Many courses received support from health departments, voluntary health agencies, foundations, pharmaceutical firms, medical societies, federal agencies, and individual contributors.

TABLE 28.—*Postgraduate Courses by Type, 1953-1954*

Type	Short Courses	Long Courses	Miscellaneous Courses	All Courses
Full-time	268	645	155	1,068
Part-time	75	540	1	616
Totals	343	1,185	156	1,684

Recent Developments.—Although all of the developments in postgraduate education cannot be touched upon here, a few significant items will suffice to indicate the trends in this field.

The ever increasing number of organizations and institutions involved in postgraduate education in various areas of the United States has led to a tremendous amount of duplication and unnecessary competition among courses. This is being met by programs of coordination among the various sponsoring organizations in some areas. Where there has been but a single medical school, such coordination has required only the cooperation of the state medical society, the medical school, state health department, and perhaps a few other interested agencies. However, coordination of postgraduate education on a state level, where a large number of medical schools and other agencies are involved, poses more difficult problems but has been achieved in Massachusetts. The Massachusetts Postgraduate Medical Institute, established a few years ago, has effectively passed through the experimental stage and has proved a success in that area. The three medical schools, the school of public health, the state medical society, the state health department, and representatives of general and special medical societies and voluntary health agencies have pooled their resources and talent to coordinate their postgraduate efforts and expand the total program to meet the needs of all physicians in the area. Many other areas of the country are studying this principle as a possible solution to their own problems.

In the past year there have been a number of new attempts to offer "canned" postgraduate programs to physicians in their homes by mail. The University of Kansas School of Medicine has offered a correspondence course in electrocardiography that has been favorably received by physicians in outlying areas. The home study is being supplemented by a period of intramural work in the medical center as a part of the complete program.

The University of Utah School of Medicine has developed a series of "postgraduate kits," which include a syllabus, phonograph record, a filmstrip, and viewer, all in a compact carrying case. These are sent as units on loan to individual physicians in outlying areas. With the limited number of units available the program has been of such success that its expansion is soon expected.

TABLE 29.—*Postgraduate Courses by Subject, 1953-1954*

Subject	Short Courses	Long Courses	Miscellaneous Courses	All Courses
Administrative medicine	..	1	..	1
Allergy	6	23	1	30
Anatomy	4	36	1	41
Arthritis	2	3	2	7
Anesthesiology	4	41	1	46
Bacteriology	..	13	4	17
Basic sciences	4	12	..	16
Biochemistry	..	1	..	1
Blood transfusions	..	1	..	1
Bronchoesophagology	..	7	..	7
Cardiovascular disease	31	62	14	107
Culdoscopy	..	1	..	1
Cytology	..	3	1	4
Dermatology and syphilology	5	21	5	31
Diabetes	5	1	..	6
Electrocardiography	4	34	..	38
Electroencephalography	..	3	..	3
Endocrinology	5	12	..	17
Endoscopy	..	16	..	16
Forensic medicine	..	2	..	2
Fractures	3	5	..	8
Gastroenterology	6	28	..	34
Geriatrics	3	..	..	3
Hematology	3	25	..	28
Hospital training	..	2	..	2
Industrial medicine	..	21	1	22
Microscopy and photomicrography	..	4	..	4
Internal medicine	15	73	10	98
Legal medicine	2	..	1	3
Malignant disease	6	8	5	19
Medicine, general	47	21	76	144
Military medicine	..	1	..	1
Neurology and psychiatry	9	97	7	113
Neurological surgery	..	2	..	2
Obstetrics and gynecology	41	94	4	139
Ophthalmology	1	17	..	18
Ophthalmology and otolaryngology	25	86	..	111
Orthopedic surgery	4	19	..	23
Orthopedics	..	7	..	7
Otolaryngology	..	6	..	6
Otology	..	1	..	1
Parasitology	..	2	..	2
Pathology	2	46	1	49
Pediatrics	12	28	6	46
Physical medicine	2	9	..	11
Physiology	7	21	..	28
Physiological chemistry	..	8	4	12
Poliomyelitis	1	4	..	5
Proctology	5	13	..	18
Psychoanalytic training	..	1	..	1
Public health	..	14	..	14
Pulmonary diseases	5	11	2	18
Radiology	5	66	2	73
Roentgenology	..	1	..	1
Surgery	60	150	7	217
Therapy	3	1	..	4
Tropical medicine	..	2	..	2
Urology	5	..	..	5
Venereal disease	1	3	..	4
Totals	343	1,185	156	1,684

Another example of the "canned program" is the development by the Audio-Digest Foundation with the California Medical Association of magnetic tape recordings accompanied by filmstrips that together constitute a package course. These are in addition to the already widespread use of the regular Audio-Digest weekly tape recording of digests of current medical literature, which physicians receive on a subscription basis. It will be of interest to medical educators generally to note that the profits of this program have all been assigned to the American Medical Education Foundation.

One of the most dramatic and significant developments in postgraduate education in the past year has been in the new applications of television to this field. During the fall, winter, and spring, the American Cancer Society sponsored a series of 40 color telecasts originating in the East and reaching six centers in the East and Midwest. These were in effect closed-circuit programs since the special receiving equipment was only available to the medical societies cooperating in the program. The program included numerous topics, all related to cancer, and was enthusiastically received by the groups viewing it. Future expansion of the program to include other fields of medicine is currently under study.

While the color television program mentioned above could only be viewed by large groups with special equipment, postgraduate education was also brought directly into the physician's home by television last fall and spring. The University of Utah sponsored two series of programs for physicians over open-circuit, public-channel television using early morning hours at which time the public did not know the channel was operating. In this way it was possible to bridge the gap between the medical center and the physician in his home. The programs have been kinescoped and made available to other medical schools interested in using them.

The New York Academy of Medicine during its annual postgraduate fortnight last fall utilized another technique that would make possible bringing postgraduate education into the physician's home by television. This involves the use of a telecast that is received only as a clouded image unless the receiving set is equipped with a special decoding device and a decoding card. This system was used at the fortnight before a group audience to demonstrate the principle of "scrambled image" television as a means of bringing postgraduate education into the physician's home on open circuit without the possibility of chance viewing by the lay public.

Although all of these experimental programs have contributed much to the development of "long-distance" postgraduate teaching, at least one medical school, the University of Kansas, has developed extensive television facilities with long-term plans to use them for undergraduate and graduate teaching.

In the past year there were two national conferences on postgraduate education. The first was held in Atlantic City last fall under the auspices of the Committee on Continuation Education of the Association of American Medical Colleges. At this meeting a number of individual papers were presented, and postgraduate program directors from many states were able to discuss their problems together. The second such conference was during the Annual Congress on Medical Education and Licensure in February. The program consisted of three panels of outstanding postgraduate medical educators who discussed various aspects of a preliminary report of the Council's current study of postgraduate medical education.[14] This too served as a valuable opportunity for a meeting of minds on this subject among educators concerned with directing postgraduate programs throughout the country.

For the past two years the Council has been engaged in a comprehensive survey of the whole field of postgraduate medical education. This study was prompted by the growing interest and activity in postgraduate education and by requests for guidance in developing programs by many institutions and organizations all over the United States. The survey has included a study of the institutions and organizations engaged in producing postgraduate programs. All of the medical schools, schools of public health, graduate and postgraduate medical schools, state medical societies, and other groups engaged in postgraduate work have been visited in the course of the survey to gain first hand information on the problems in this field. The individual courses offered by these institutions and organizations have been analyzed carefully for objectives, content, time and place arrangements, methods, and administration.

In addition to this study of the producers of postgraduate education, by means of questionnaires a large, random, representative sample of the practicing physician population has been canvassed to include the consumers' views in the completed study. The questions were designed to elicit information on the physicians' habits of continuation education in general, as well as their specific uses of and needs for postgraduate courses.

A preliminary report of the results of the statistical phase of the survey was prepared early in 1954, and a preview of this report was published in May of this year.[14] The final report of the entire survey is being prepared and will be published in 1955.

Postgraduate medical education is rapidly becoming recognized as an integral part of the whole structure of medical education. Its use is becoming more widespread and the institutions and organizations sponsoring such courses are becoming more numerous. In the past year, there have been indications of increased efforts to bring postgraduate education to the physician by means of "canned programs" or by television. Moreover, those concerned with the administration of postgraduate programs have had increasing opportunity to exchange ideas at nationwide meetings sponsored by the Association of American Medical Colleges and the A. M. A. Coordination programs are emerging as an answer to the difficult problems of administration in postgraduate education. In the past year postgraduate opportunities increased in numbers and became more widely distributed, and attendance figures rose encouragingly. There is every indication that postgraduate education is making long strides both quantitatively and qualitatively, and it is hoped that the publication next year of the Council's survey of the field will aid this development.

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14. Vollan, D. D.: Preview of Principal Findings of American Medical Association Survey of Postgraduate Medical Education, report of the Council on Medical Education and Hospitals, J. A. M. A. **155**: 389-392 (May 22) 1954. Panel Discussion: The Objectives of Postgraduate Medical Education, Annual Congress on Medical Education and Licensure, February, 1954, Part 2, Reprint of Medical Education in the United States and Canada, to be published.

APPROVED MEDICAL SCHOOLS IN THE UNITED STATES

ALABAMA

Birmingham

Medical College of Alabama, 620 South 20th Street, Zone 5.—Established in 1943 as a division of the University of Alabama. Located in Birmingham in 1944. In 1945 the medical school assumed title to Jefferson Hospital and Hillman Hospital, now used as the chief clinical teaching unit of the Medical College of Alabama. The entering class each year is limited to 80 students. The School of the Basic Medical Sciences on the University Campus, established in 1920, and its faculty were moved to Birmingham in June, 1945, and expanded into the present four year Medical College of Alabama. The medical college is coeducational. Minimum requirements are three years of college work. Tuition for legal residents of Alabama is $400 per academic year plus incidental fees of $50. Transfer students to the upper classes, not residents of Alabama, are charged an equalization fee of $250 each session. The registration for the 1953-1954 session was 295; graduates 61. The last session began for the first three classes on Sept. 21, 1953. The fourth year class started on Sept. 8, 1953. The session ended for all classes on May 30, 1954. The next session for the first three classes will begin Sept. 15, 1954, and end May 29, 1955. The dean is James J. Durrett, M.D.

ARKANSAS

Little Rock

University of Arkansas School of Medicine, 1209 McAlmont Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The curriculum covers four sessions of nine months each. Entrance requirements are three years of collegiate work. The B.S. degree is conferred at the end of the second year. The fees for the four years for residents of Arkansas are $380 a year; enrollment is restricted to residents of Araknsas. The registration for the 1953-1954 session was 318; graduates 72. The last session began Sept. 21, 1953, and ended June 14, 1954. The next session will begin Sept. 20, 1954, and will end June 13, 1955. The dean is Hayden C. Nicholson, M.D.

CALIFORNIA

Loma Linda—Los Angeles

College of Medical Evangelists, Loma Linda; and 312 North Boyle Avenue, Los Angeles, Zone 33.—Organized in 1909. The first class was graduated in 1914. The basic science departments are at Loma Linda; the clinical departments at Los Angeles. Coeducational since organization. Three years of college work are required for admission. Each of the four years of the medical curriculum consists of a nine month session. In addition there is a required clinical clerkship in the summer between the junior and senior years. The yearly tuitions, including fees, are respectively, $1,286, $1,274.50, $1,277.75, $1,295.25. The registration for 1953-1954 was 365, including 92 seniors who received their degrees June 6. For the 1953-1954 session the beginning and closing dates were: freshmen, Aug. 27, 1953-June 4, 1954; sophomores, Aug. 30, 1953-June 4, 1954; juniors and seniors, Sept. 13, 1953-June 4, 1954. For the 1954-1955 session the beginning and closing dates are: freshmen, Aug. 29, 1954-June 3, 1955; sophomores, Sept. 1, 1954-June 3, 1955; juniors and seniors, Sept. 12, 1954-June 3, 1955. The dean is Harold Shryock, M.D., Loma Linda.

Los Angeles

University of Southern California School of Medicine, 2025 Zonal Avenue, Zone 33.—Organized in 1885 as the University of Southern California College of Medicine. First class graduated in 1899. In 1908 it became the Los Angeles Medical Department of the University of California. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized in May, 1928, under present title. Entrance requirements are three years of college work. Coeducational since organization. Annual fees amount to approximately $920. Registration for 1953-1954 was 273; graduates 72. The last session began Sept. 21, 1953, and ended June 12, 1954. The next session will begin Sept. 20, 1954, and will end June 11, 1955. The dean is Gordon E. Goodhart, M.D.

San Francisco

University of California School of Medicine, Medical Center, San Francisco, Zone 22.—Organized in 1864 as the Toland Medical College. The first class graduated in 1864. In 1873 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California at Los Angeles became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homopathic materia medica and therapeutics were provided. Coeducational since organization. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The medical course consists of four academic years, each containing two semesters of 16 weeks each. The fees are $334 per academic year. Nonresidents are charged $250 additional each year. The registration for the 1953-1954 session was 309; graduates 74. The last session began Sept. 14, 1953, and ended June 18, 1954. The next class will begin Sept. 13, 1954, and will end June 16, 1955. The associate dean is John B. Lagen, M.D.

Stanford—San Francisco

Stanford University School of Medicine, Stanford; 2398 Sacramento Street, San Francisco.—The main buildings are in San Francisco. The laboratories of anatomy, bacteriology and experimental pathology, chemistry and physiology are located on the campus at Stanford, which is 30 miles southwest of San Francisco adjoining the city of Palo Alto. The post office is Stanford. Organized in 1908, when by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. Three years of collegiate work are required for admission. The quarter plan is in operation. An internship is a requirement for graduation. The average fee for each of the four years is $870. The registration for 1953-1954 was 239; graduates 64. The last session for all classes began Sept. 28, 1953, and ended June 9, 1954. The next session will begin Sept. 27, 1954, and will end June 15, 1955. The dean is Windsor Cooper Cutting, M.D.

COLORADO

Denver

University of Colorado School of Medicine, 4200 East Ninth Avenue, Zone 20.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine were merged Jan. 1, 1911. Coeducational since organization. The entrance requirements are three years of collegiate work. The fees average $655 per academic year. Nonresidents are charged $2,000 additional each year. The registration for 1953-1954 was 305; graduates 81. The last session began Sept. 19, 1953, and ended June 4, 1954. The next session will begin Sept. 28, 1954, and will end June 10, 1955. The dean is Robert C. Lewis, Ph.D.

CONNECTICUT

New Haven

Yale University School of Medicine, 333 Cedar Street, Zone 11.—Initial organization of the School of Medicine was completed in 1812 following passage of a bill by the Connecticut General Assembly in 1810 granting a charter for "The Medical Institution of Yale College," to be conducted under joint supervision of the College and the Connecticut State Medical Society. Formally opened in 1813; first degrees conferred 1814. In 1884, with the approval of the Medical Society, the original charter was amended to place the school definitely in the control of the College as the Medical School of Yale College. The name Yale College was changed to Yale University in 1887 and the name of the Medical School was automatically changed. The present name was adopted in 1918. Coeducational since 1916. The requirements for admission are three years of college work. The fees average $829 per academic year. The registration for 1953-1954 was 303; graduates 63. The last session began Sept. 23, 1953, and ended May 29, 1954. The next session will commence Sept. 29, 1954, and will end June 4, 1955. The dean is Vernon W. Lippard, M.D.

DISTRICT OF COLUMBIA

Washington

Georgetown University School of Medicine, 3900 Reservoir Road, Northwest, Zone 7.—Organized in 1851. First class graduated in 1852. The degree of Bachelor of Arts or Bachelor of Science or its equivalent from an approved college of arts and sciences is required for admission of nonveterans, but veterans may be admitted with a minimum of 90 semester hours of credit. The fees average $960 per academic year. Registration for 1953-1954 was 455; graduates 107. The last session for freshmen started Sept. 14, 1953, and ended May 22, 1954; the sophomore class started Sept. 14, 1953, and ended May 22, 1954; the junior class started Aug. 26, 1953, and ended May 14, 1954, and the senior class started on May 25, 1953, and ended on May 22, 1954. The date of graduation was June 7, 1954. The next session for freshmen and sophomores will begin Sept. 13, 1954, and end on May 21, 1955; the junior session began Aug. 25, 1954, and will end May 13, 1955; the senior session began May 24, 1954, and will end May 21, 1955. The date of graduation will be June 6, 1955. The dean is Francis M. Forster, M.D.

George Washington University School of Medicine, 1335 H Street, Northwest, Zone 5.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name "National Medical College." Classes were graduated in 1826 and in all subsequent years except in 1834-1838 and 1861-1863 inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904 by an Act of Congress the title of George Washington University was granted to the institution. Coeducational since 1884. Three years of college work are required for admission. The tuition is $850 per academic year. Registration for 1953-1954 was 350; graduates 78. The last session began Sept. 21, 1953, and ended June 9, 1954. The next session will begin Sept. 20, 1954, and will end on May 8, 1955. The dean is Walter A. Bloedorn, M.D.

Howard University College of Medicine, 520 W Street, Northwest, Zone 1.—Chartered in 1867. Organized in 1869. The first class was graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The minimum requirements are four years of collegiate work, but practically the bachelor's degree. The course covers four years of 33 weeks each. The fees are respectively; $611.75; $601.75; $546.75; $546.75. The registration for 1953-1954 was 299; gradu-

ates 69. The last session began Sept. 21, 1953, and ended June 4, 1954. The next session will begin Sept. 20, 1954, and will end June 3, 1955. The dean is Joseph L. Johnson, M.D.

GEORGIA

Atlanta

Emory University School of Medicine, 36 Butler Street (University P. O.).—Organized in 1854 as the Atlanta Medical College. After several mergers and reorganization became Emory University School of Medicine in 1915. Three years of collegiate work are required for admission. The course of study is four academic years of 36 weeks each. The fees for each of the four academic years are $800. The registration for 1953-1954 was 285; graduates 70. The last session for first and second years began Aug. 27 and Sept. 1, 1953, and ended June 5, 1954. Third and fourth year classes began Aug. 3, 1953, and ended June 5, 1954. The next session will begin Sept. 16 for first year class, Sept. 20 for second year, and Sept. 1, 1954, for third and fourth year classes, and will end June 4, 1955. In 1953, the departments of anatomy, bacteriology, biochemistry, pharmacology, and physiology of the School of Medicine were consolidated with these same departments in the Schools of Dentistry and Nursing to form the Division of Basic Sciences in the Health Services. The dean is Richard Hugh Wood, M.D.

Augusta

Medical College of Georgia, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. After 1873 it was known as the Medical Department of the University of Georgia. On July 1, 1933, the name was changed to the University of Georgia School of Medicine. On Jan. 18, 1950 it became the Medical College of Georgia. Property transferred to the university in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. Three years of college work are required for admission. Fees for 1954-1955, $412 per academic year for residents of Georgia, non-residents, $712. Only bona fide residents of Georgia admitted (with exception of A. S. T. and V-12 Program students during World War II). The registration for the 1953-1954 session was 304; graduates 73. The 1954-1955 session for the fourth year class will begin Sept. 6, 1954, and end June 6, 1955; the first, second, and third year classes will begin Sept. 16, 1954, and end June 4, 1955. The dean is Harry B. O'Rear, M.D.

ILLINOIS

Chicago

Chicago Medical School, 710 South Wolcott Avenue.—Founded in 1912 as the Chicago Hospital College of Medicine. In 1919 the name of the institution was changed to the Chicago Medical School. The school moved from its former location to its present site in the Medical Center in 1930. The Chicago Medical School is a nonsectarian, coeducational institution. It is chartered in the State of Illinois as a nonprofit institution. A collegiate degree is required for admission. The yearly tuition and fees are, respectively, $671, $880, $847, $649. The registration for 1953-1954 was 280; graduates 134. The last session for freshmen began Oct. 5, 1953, and for sophomores July 6, 1953, and ended June 19, 1954; The junior and senior session began Oct. 5, 1953, and ended for seniors June 26, 1954. The junior class will end Sept. 23, 1954. The next session for freshmen, juniors, and seniors will begin Oct. 4, 1954, and will end June 18, 25, and 18, 1955, respectively. The sophomore class began July 6, 1954, and will end June 18, 1955. The president is John J. Sheinin, M.D.

Northwestern University Medical School, 303 East Chicago Avenue, Zone 11.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The requirement for admission is three years of collegiate work. The B.S. in medicine degree may be conferred before the end of the senior year. The total fees are $930 each year. The registration for 1953-1954 was 533; graduates 136. The last session began Sept. 30, 1953, for freshmen, sophomores, and juniors and ended June 12, 1954. The senior session began June 17, 1953, and ended June 14, 1954. The next session will begin Sept. 29, 1954, for freshmen, sophomores, and juniors and will end June 11, 1955. The senior session began June 16, 1954, and will end June 13, 1955. The dean is Richard H. Young, M.D.

Stritch School of Medicine of Loyola University, 706 South Wolcott Avenue, Zone 12.—Organized in 1915 by acquisition of Bennett Medical College, which had been organized in 1869. Facilities enlarged by the acquisition of Chicago College of Medicine and Surgery. Faculties in basic sciences put on full-time basis and assumed name of Loyola University School of Medicine in 1917. Operated as an organic part of Loyola University. Name officially changed to Stritch School of Medicine of Loyola University on April 15, 1948. Coeducational since organization. Three years of collegiate work are required for admission. The fees are $675 a year. The registration for 1953-1954 was 336; graduates 83. The last session for freshmen and sophomores began Sept. 28, 1953, and ended June 19, 1954; the session for juniors and seniors began Sept. 8, 1953, and ended May 29, 1954, for seniors; June 5, 1954, for juniors. The next session will begin Sept. 27, 1954, and will end June 18, 1955, for the first two classes; it began Sept. 7, 1954, and will end June 4, 1955, for juniors; for seniors the session began June 7, 1954, and will end May 28, 1955. Each student has a five week vacation sometime in the year. The dean is John F. Sheehan, M.D.

University of Chicago, the School of Medicine, 58th Street and Ellis Avenue, Zone 37.—Organized in 1924, as a part of the Ogden Graduate School of Science of the University of Chicago. In 1932, when the University of Chicago reorganized its departments, the medical departments were included in the Division of Biological Sciences. The work of the first two years in the medical courses has been given on the University Quadrangles since 1899; but the last two years were offered only at Rush Medical College, which was affiliated with the university until 1927, when actual work in the clinical departments on the campus began. After that time candidates for the degree of Doctor of Medicine could take the work of the first two years on the campus and the work of the third and fourth years either on the campus or at the Rush Medical College. In June 1940 Rush Medical College became affiliated with the University of Illinois College of Medicine. All undergraduate instruction is now given only on the campus of the University of Chicago. A special function of the school is to train people for making contributions to the advancement of medical science. The requirements for admission are three years of collegiate work. The curriculum covers 12 quarters of work. The tuition fee averages $904. The registration for 1953-1954 was 280; graduates 69. Quarters begin in March, June, September, and December of each year. The dean of the Division of the Biological Sciences is Lowell T. Coggeshall, M.D.

University of Illinois College of Medicine, 1853 West Polk Street, Zone 12.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June, 1912, and was restored in March, 1913, when the present title was assumed. The staff of the Rush Medical College was incorporated in the University of Illinois College of Medicine in 1942 and at the same time Presbyterian Hospital, Chicago, became a teaching unit of the university. Coeducational since 1898. Three years of collegiate work are required for admission. The B.S. in medicine degree may be conferred at the end of the second year. The fees for residents of Illinois average $288 per academic year; nonresidents pay an additional fee of $300. The registration for the 1953-1954 session was 667; graduates 169. The last session began Sept. 28, 1953, and ended June 19, 1954. The next session will begin Sept. 27, 1954, and will end June 18, 1955. The dean is Granville A. Bennett, M.D.

INDIANA

Bloomington-Indianapolis

Indiana University School of Medicine, Bloomington; 1040 West Michigan Street, Indianapolis, Zone 7.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907 by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. Three years of college work are required for admission. The work of the first two semesters is given at Bloomington; the remainder of the work at Indianapolis. Regular fee for two semesters of work is $320 for residents of Indiana and $600 for nonresidents. The registration for the 1953-1954 session was 575; graduates 139. The present session for junior and senior students began June 15, 1954, and will end June 14, 1955. The next session for sophomore students will begin Sept. 15, 1954, and end June 11, 1955. The dean is John D. Van Nuys, M.D., Indianapolis.

IOWA

Iowa City

State University of Iowa College of Medicine, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. Three years of collegiate work are required for admission. The B.A. degree in the combined course of liberal arts and medicine is conferred. The tuition fee is $256 each year for residents of Iowa and $566 for nonresidents. The registration for 1953-1954 was 458; graduates 116. The last session began Sept. 24, 1953, and ended June 11, 1954. The next session will begin Sept. 23, 1954, and will end on June 10, 1955. The dean is Norman B. Nelson, M.D.

KANSAS

Lawrence-Kansas City

University of Kansas School of Medicine, Lawrence; Thirty-Ninth and Rainbow Boulevard, Kansas City.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medicochirurgical College, founded in 1897. Absorbed Kansas Medical College of Topeka in 1913. The first class graduated in 1906. At present the first year is given on the university campus at Lawrence while the remaining three years are given at the Medical Center in Kansas City, Kansas. Coeducational since 1880. The requirement for admission is three years of collegiate work, four years preferred. The fees are $475 per year; the nonresident fees are $925 per year. The registration for 1953-1954 was 456; graduates 105. The last session began June 9, 1953, and ended May 29, 1954. The next freshman class will begin Sept. 8, 1954. The sophomore class of 1954 will begin its work on Sept. 16, 1954, at Kansas City. The junior and senior classes began June 8, 1954, and will end May 28, 1955. Three-fourths of each junior and senior class is in school each quarter of the school year while one-fourth is on vacation (juniors) or preceptorship (seniors). The dean is W. Clarke Wescoe, M.D., Kansas City.

KENTUCKY

Louisville

University of Louisville School of Medicine, 101 West Chestnut Street, Zone 2.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908, the Louisville Medical College, the Hospital College of Medicine, and the Kentucky School of Medicine. In 1922 its name was changed to the University of Louisville School of Medicine. Coeducational since organization; became nonsegregational in 1951. Three years of collegiate work are the minimum requirements for admission. Tuition is $800 for residents of Kentucky and $1,200 for nonresidents, per school year. These figures include special fees excepting graduation fee of $10. The registration for 1953-1954 was 381; graduates 92. Administratively, the school year is divided into two semesters and students are accepted for matriculation only at the beginning of the first semester. Academically, the senior and junior years are on a trimester basis, the sophomore year is divided into four unequal periods, and the freshman year into three unequal periods. The last session began Sept. 14, 1953, and ended June 5, 1954. The next session begins on Sept. 13, 1954, and will end on June 4, 1955. The dean is J. Murray Kinsman, M.D.

LOUISIANA

New Orleans

Louisiana State University School of Medicine, 1542 Tulane Avenue, Zone 12.—Organized January, 1931, as Louisiana State University Medical Center. Present title in 1939. Coeducational. First session began in October, 1931, with students of first and third years. Course covers four sessions of not less than 36 weeks each. A minimum of three years collegiate work is required for admission. Total fees, $120 each year for residents of Louisiana; additional tuition of $400 each year for nonresidents. The registration for 1953-1954 was 448; graduates 107. The last session began Aug. 31, 1953, and ended May 29, 1954. The current session began Aug. 30, 1954, and will end May 28, 1955. The dean is William W. Frye, M.D.

Tulane University of Louisiana School of Medicine, 1430 Tulane Avenue, Zone 12.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1836 and in all subsequent years except 1863-1865, inclusive. It became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1813. Coeducational since 1915. A minimum of three years of collegiate work is required for admission. Total fees average $800 per academic year. The registration for the 1953-1954 session was 516; graduates 128. The last session began on Sept. 14, 1953, and ended on June 1, 1954. The next session will begin Sept. 13, 1954, and will end May 31, 1955. The dean is M. E. Lapham, M.D.

MARYLAND

Baltimore

Johns Hopkins University School of Medicine, 710 North Washington Street.—The nucleus of a medical faculty was constituted in 1883. Systematic postgraduate instruction in pathology and bacteriology was begun in 1886. School was fully organized and opened in 1893. The first class graduated in 1897. Coeducational since organization. The requirement for admission is a college degree. The course extends over four years of eight and one-half months each. The fees average $939 per academic year. The registration for 1953-1954 was 294; graduates 77. The last session began on Sept. 28, 1953, and ended June 8, 1954. The next session will begin Oct. 4, 1954, and will end June 14, 1955. The dean is Philip Bard, Ph.D.

University of Maryland School of Medicine and College of Physicians and Surgeons, 522 West Lombard Street, Zone 1.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine; Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. Three years of college work are required for admission. The tuition fees average $533 for residents of the state; for nonresidents $250 additional. The registration for 1953-1954 was 404; graduates 96. The last session began Sept. 17, 1953, and ended June 5, 1954. The next session will begin Sept. 16, 1954, and will end June 4, 1955. The dean is H. Boyd Wylie, M.D.

MASSACHUSETTS

Boston

Boston University School of Medicine, 80 East Concord Street, Zone 18.—Organized in 1873 as a homeopathic institution. In 1874, the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Applicants are required to present a minimum of three years of premedical work. Total fees average $881 per year. The registration for 1953-1954 was 288; graduates 66. The last session for freshmen, sophomores, and juniors began Sept. 14, 1953, and ended May 29, 1954. The last senior class began June 15, 1953, and ended June 6, 1954. The present senior class began June 14, 1954, and will end June 5, 1955. All other classes will be enrolled Sept. 13, 1954, and the session will end May 28, 1955. The dean is James M. Faulkner, M.D.

Harvard Medical School, 25 Shattuck Street, Zone 15.—Organized in 1782. The first class graduated in 1788. At least two years of collegiate work are required for admission. The fees average $850. Beginning with the academic year 1954-1955, the fees will average $1,050. The registration for 1953-1954 was 531; graduates 148. The last session began Sept. 28, 1953, and ended on June 17, 1954. The next session for freshmen, sophomores, and juniors will begin Sept. 27, 1954, and will end June 16, 1955. The senior class began on June 7, 1954, and will end June 16, 1955. The dean is George Packer Berry, M.D.

Tufts College Medical School, 136 Harrison Avenue, Zone 11.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. A bachelor's degree is required for admission, although exceptions are occasionally made for outstanding students. Enrollment is generally limited to residents of the New England states, graduates of New England colleges, and sons or daughters of alumni. The course covers four years. Total fees for each of the four years, respectively, $863, $858, $858, $868. The registration for 1953-1954 was 449; graduates 110. The last session for freshmen, sophomores, and juniors began Sept. 23, 1953; for seniors June 15, 1953, and all classes ended June 13, 1954. The present session began for seniors on June 14, 1954, and for the other classes will begin Sept. 22, 1954, and will end June 12, 1955. The dean is Joseph M. Hayman Jr., M.D.

MICHIGAN

Ann Arbor

University of Michigan Medical School.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed 1915. Coeducational since 1870. The entrance requirements are three years of collegiate work. The fees average $400 per academic year; nonresidents $700 a year. The registration for 1953-1954 was 728; graduates 155. The last session began Sept. 21, 1953, and ended June 12, 1954. The next session will begin Sept. 20, 1954, and will end June 11, 1955, except for seniors, who are on a rotation schedule and whose session begins June 21, 1954, and ends June 11, 1955. The dean is A. C. Furstenberg, M.D.

Detroit

Wayne University College of Medicine, 1401 Rivard Street, Zone 7.—Organized as the Detroit College of Medicine in 1885 by consolidation of the Detroit Medical College (organized in 1868) and the Michigan College of Medicine (organized 1879). Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1869. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit city colleges into a university system. Coeducational since 1917. Entrance requirement is three years in an accredited college or university. Until further notice, enrollment is limited to residents of the State of Michigan. The fees average $537 for the school year. The registration for 1953-1954 was 277; graduates 65. The last session began Sept 14, 1953, and ended June 12, 1954. The next session will begin Sept. 13, 1954, and will end June 11, 1955. The dean is Gordon H. Scott, Ph.D.

MINNESOTA

Minneapolis

University of Minnesota Medical School, Zone 14.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery and reorganized in 1888 by absorption of the St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The entrance requirements are three years of university work. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Doctor of Medicine (M.D.), which is granted at the end of the course. Total fees are $361.50 per academic year for residents and $700 for nonresidents. The registration for 1953-1954 was 490; graduates 133. The last session began Sept. 28, 1953, and ended July 17, 1954. The next session will begin Sept. 27, 1954 and will end July 17, 1955. The school year of the first three years consists of fall and winter quarters of approximately 11 weeks and a spring quater of approximately 16 weeks; in the senior year the spring quarter is 11 weeks in length and graduation is in June. The dean of medical sciences is Harold S. Diehl, M.D.

MISSOURI

St. Louis

St. Louis University School of Medicine, 1402 South Grand Boulevard, Zone 4.—Organized in 1901 as the Marion-Sims Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the School of Medicine of St. Louis University in 1903. Completion of three years of college study is the minimum admission requirement, but students presenting meritorious credits in excess of minimum are accepted by preference. The fees average $896.25 per year. The registration for 1953-1954 was 491, graduates 132. The last session began Sept. 15, 1953, and ended June 1, 1954. The next session will begin Sept. 14, 1954, and will end June 1, 1955. The dean is James W. Colbert Jr., M.D.

Washington University School of Medicine, 660 South Kingshighway, Zone 10.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it become the Medical Department of Washington University. In

1899 it absorbed the Missouri Medical College. Coeducational since 1918. Three years of college work are required for admission. The fees average $906. The registration for 1953-1954 was 366; graduates 96. The last session began on Sept. 14, 1953, and ended June 9, 1954. The next session will begin on Sept. 13, 1954, and will end on June 8, 1955. The dean is Carl V. Moore, M.D.

NEBRASKA

Omaha

Creighton University School of Medicine, 302 North Fourteenth Street, Zone 2.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. Three years of collegiate work are required for admission. The tuition fees average $809 per academic year. The registration for 1953-1954 was 300; graduates 70. The last session began Sept. 14, 1953, and ended June 3, 1954. The next session will begin Sept. 13, 1954, and will end June 2, 1955. The dean is F. G. Gillick, M.D.

University of Nebraska College of Medicine, Forty-Second Street and Dewey Avenue, Zone 5.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. The University of Nebraska College of Medicine was established in Lincoln in 1883, and in 1902 the Omaha Medical College became a part of the University of Nebraska and has continued with the present title College of Medicine, University of Nebraska. The instruction of the first two years was given at Lincoln and of the last two years at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. Three years of college work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees average $450 per academic year; nonresidents are charged $615. The registration for 1953-1954 was 344; graduates 92. The last session for seniors began July 6, 1953, and ended June 12, 1954. The last session for freshmen, sophomores, and juniors began Sept. 23, 1953, and ended June 19, 1954. The present session for seniors began July 6, 1954, and will end June 18, 1955. The next session for freshmen, sophomores, and juniors will begin Sept. 22, 1954, and will end June 18, 1955. The dean is James P. Tollman, M.D.

NEW YORK

Albany

Albany Medical College, 47 New Scotland Avenue, Zone 3.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The requirement for admission is three years of college work. The fees average $1,007 per academic year. The registration for 1953-1954 was 212; graduates 53. The last session began on Sept. 14, 1953, for the freshman and sophomore classes, the freshman year ending on June 3, 1954, and the sophomore year on May 29, 1954; the junior year began on Sept. 8, 1953, and closed on May 20, 1954; for the seniors the last session began on June 1, 1953, and ended on May 31, 1954. The present senior class began on June 1, 1954. The next session for the freshmen and sophomores will begin on Sept. 8, 1954, and will end on May 28, 1955. The current session for the juniors began Sept. 7, 1954 and will end on May 24, 1955. The dean is Harold C. Wiggers, Ph.D.

Buffalo

University of Buffalo School of Medicine, 3435 Main Street.—Organized in 1846. The first class granduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The minimum requirement for admission is four years of collegiate work including certain prescribed science subjects. The fees average $878. The registration for 1953-1954 was 279; graduates 70. The last session began Sept. 21, 1953, and ended June 12, 1954, for freshmen, sophomores, and juniors, and began on Aug. 31, 1953, and ended June 5, 1954, for seniors. The next session will begin Sept. 20, 1954, and end June 11, 1955, for freshmen, sophomores, and juniors, and began Aug. 30, 1954, and will end June 4, 1955, for seniors. The dean is Stockton Kimball, M.D.

New York City

Columbia University College of Physicians and Surgeons, 630 West 168th Street, Zone 32.—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. Three years of collegiate work are required for admission. Fees average $900 per academic year. The registration for 1953-1954 was 465; graduates 111. The last session began June 8, 1953, for juniors, and June 1, 1953 for seniors, and ended on May 29, 1954. The last session for freshmen and sophomores began on Sept. 14, 1953, and ended May 29, 1954. The present session began on June 7, 1954, for juniors and June 1, 1954 for seniors, and will begin on Sept. 13, 1954, for the freshmen and sophomores and will end May 31, 1955. The dean is Willard C. Rappleye, M.D.

Cornell University Medical College, 1300 York Avenue, Zone 21.—Organized in 1898. Coeducational since organization. All students matriculated must be graduates of approved colleges or scientific schools or seniors *in absentia* who will receive the bachelor's degree from their college on successful completion of one or more years of the medical course. The fees average $925 a year. The registration for 1953-1954 was 337; graduates 83. The last session began for senior students June 22, 1953, and ended June 9, 1954. The freshman, sophomore, and junior classes began Sept. 9, 1953, and ended June 9, 1954. The present session for seniors began July 5, 1954, and will begin for the remaining three classes on Sept. 15, 1954, and all classes will end June 8, 1955. The dean is E. Hugh Luckey, M.D.

New York Medical College, Flower and Fifth Avenue Hospitals, 1 East 105th Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; the title New York Homeopathic Medical College and Hospital in 1887; the title New York Homeopathic Medical College and Flower Hospital in 1908; the title New York Medical College and Flower Hospital in 1936; the present title of New York Medical College, Flower and Fifth Avenue Hospitals, June 22, 1938. First class graduated in 1861. Coeducational since 1919. Four years of college work leading to a baccalaureate degree required for admission, but a degree is preferred. The fees average $865 per academic year. The registration for 1953-1954 was 478; graduates 112. The last session began Sept. 14, 1953, and ended June 2, 1954. The next session will begin Sept. 13, 1954, for first and second year students. Third year students began June 7, 1954, and fourth year students May 23, 1954. The Executive Dean is Ralph E. Snyder, M.D.

New York University College of Medicine, 550 First Avenue, Zone 16.—This is the undergraduate medical college of the New York University-Bellevue Medical Center, which also includes the New York University Postgraduate Medical School and the University Hospital. The Medical Department of New York University (then called the University of the City of New York) was organized in 1841 as the University Medical College. In 1898 the Bellevue Hospital Medical College, which had been established in 1861, joined New York University and the consolidated school was called the New York University-Bellevue College of Medicine. In 1935 the present name was adopted. In 1947 the charter of the university and the statutes were amended establishing the New York University-Bellevue Medical Center, which includes the College of Medicine. The entrance requirements are not less than three full years in an approved college of arts and sciences, and preference is given to those who have completed four years. This medical school has been coeducational since 1919. The fees average $917 per academic session. The registration for 1953-1954 was 530; graduates 121. The last session began Sept. 14, 1953, and ended May 22, 1954, for freshmen and sophomores, May 29, 1954, for seniors, and Sept. 11, 1954, for juniors. The next session begins Sept. 13, 1954, for freshmen, sophomores, and juniors, and Sept. 21, 1954, for seniors. This session will end May 21, 1955, for freshmen and sophomores, Sept. 10, 1955, for juniors, and June 4, 1955, for seniors. The dean is Currier McEwen, M.D.

State University of New York College of Medicine, 350 Henry Street, Zone 2.—Originally organized in 1858 as the collegiate department of the Long Island College Hospital. The first class was graduated in 1860 and the last class in 1930. Chartered in 1930 as the Long Island College of Medicine with the first class graduated in 1931 and the last in 1949. It was merged with the State University of New York on April 5, 1950, and the first class under the university was graduated in June, 1950. Coeducational. Three years of collegiate work, including specified courses, are required for admission. The fees are $715 per academic year. The registration for 1953-1954 was 573; graduates 131. The last session for the seniors began Sept. 14, 1953, and ended June 5, 1954. The last session for juniors began on Sept. 21, 1953, and ended on June 5, 1954. The last session for freshmen and sophomores began on Sept. 21, 1953, and ended June 12, 1954. The next session for freshmen, sophomores, and juniors begins Sept. 20, 1954, and will end on June 11, 1955. For the seniors the next session will begin Sept. 13, 1954, and will end on June 4, 1955. The acting dean is Howard Potter, M.D.

Rochester

University of Rochester School of Medicine and Dentistry, 260 Crittendon Boulevard, Zone 20.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. Three years of collegiate work are required for admission. The fees are $800 per academic year. The registration for 1953-1954 was 280; graduates 69. The last session began Sept. 21, 1953, and ended June 12, 1954. The next session will begin on Sept. 13, 1954, and will end on June 11, 1955. The dean is Donald G. Anderson, M.D.

Syracuse

State University of New York College of Medicine, 766 Irving Avenue, Zone 10.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Assumed title Syracuse University College of Medicine in 1875, when a compulsory three year graded course was established. The College of Medicine was merged with the State University of New York on June 26, 1950, when the present title was assumed. The first class graduated in 1873, and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. Three years of collegiate work are required for admission. The fees average $715 per academic year. The registration for 1953-1954 was 285; graduates 66. The last session began Sept. 14, 1953, and ended June 12, 1954. The next session will begin Sept. 13, 1954, and end June 11, 1955. The dean is Willam R. Willard, M.D.

NORTH CAROLINA

Chapel Hill

University of North Carolina School of Medicine.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department in Raleigh. The first class was graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of college work are normally required for admission. The tuition is $600 per year for residents; for nonresidents an additional $600 per year. The registration for 1953-1954 was 226. The North Carolina legislature in 1947 appropriated funds for the expansion of the school to the full four years. The first senior class of 48 students graduated June 7, 1954. The last regular session began Sept. 18, 1953, and ended June 7, 1954. The next session will begin Sept. 14, 1954, and will end June 6, 1955. The dean is W. Reece Berryhill, M.D.

Durham

Duke University School of Medicine.—Organized in 1930. The first class was admitted Oct. 1, 1930. Coeducational. The premedical requirement is three years of college work. The academic year consists of three quarters each year. There is no summer quarter between the first and second year, but in the two clinical years the subjects of the autumn, winter, and spring terms are repeated in the summer quarter. This accelerated schedule is optional, and students may take their first year, and three quarters in each of their subsequent years, and receive their certificates in four calendar years, or if they receive permission from the curriculum committee they may at the end of their second year take the clinical quarters given during the summers and receive their certificates in three and one-quarter calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the committee on health affairs that they will spend at least two years. Active duty with the Army, Navy, or Public Health Service can replace the second year. The fees are $922.50 for three quarters. The registration for 1953-1954 was 316; graduates 80. During 1954 the quarters begin Jan. 4, March 29, July 6, Oct. 4, and end March 20, June 12, Sept. 18, and Dec. 18. The next first year class will be enrolled Oct. 4, 1954, and will end June 11, 1955. The dean is Wilburt C. Davison, M.D.

Winston-Salem

Bowman Gray School of Medicine of Wake Forest College, Zone 7.—Organized in 1902 at Wake Forest as a school offering only the first two years of the curriculum. In 1941 the school was moved to Winston-Salem and expanded to a complete four year medical school under its present name. Coeducational. Three years of college work are required for admission. Clinical departments operate four quarters in the year; however, the plan of operation makes it possible for students to be out of school during one quarter of each of the clinical years for research, for study elsewhere, or for earning money to help defray expenses for their education. Tuition is $750 per school year. The registration for 1953-1954 was 200; graduates 50. The last session for the freshman class began Oct. 5, 1953; sophomores Oct. 5, 1953; juniors and seniors July 13, 1953, and ended for freshmen, sophomores, juniors, and seniors on June 12, 1954. The present junior and senior classes began July 12, 1954, and will end on June 11, 1955. The next freshmen and sophomore classes will begin Oct. 4, 1954, and will end June 11, 1955. The dean is C. C. Carpenter, M.D.

OHIO

Cincinnati

University of Cincinnati College of Medicine, Eden and Bethesda Avenues, Zone 19.—Organized in 1819 as the Medical College of Ohio. Became the Medical College of the University of Cincinnati in 1896. In 1909 the Miami Medical College (founded in 1852) was merged with the University of Cincinnati's Medical School. Coeducational since organization. Three years of collegiate work are the minimal requirements for admission, but a bachelor's degree is strongly recommended. Tuition for legal residents of Cincinnati is $575 a year plus breakage fees. $125 additional for those not legal residents. The registration for 1953-1954 was 352; graduates 89. The last session for freshmen and sophomores began Sept. 21, 1953, and ended May 31, 1954. The last session for juniors and seniors began Sept. 8, 1953, and ended for juniors June 12, 1954, and for seniors May 31, 1954. The present session for juniors and seniors began Sept. 7, 1954, and will end for juniors June 11, 1955, and for seniors May 28, 1955. The next session for freshmen and sophomores will begin Sept. 20, 1954, and will end May 28, 1955. The dean is Stanley E. Dorst, M.D.

Cleveland

Western Reserve University School of Medicine, 2109 Adelbert Road, Zone 6.—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. The school assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. Students are required to have three years of college work for admission; four years preferred. The fees average $800 per academic year. The registration for 1953-1954 was 335; graduates 85. The last session began Sept. 23, 1953, for freshmen and ended June 16, 1954. For sophomores the last session began Sept. 16, 1953, and ended June 18, 1954. For juniors the last session began Sept. 16, 1953, and ended June 4, 1954. For seniors the last session began Aug. 31, 1953, and ended June 17, 1954. The next session for freshmen will begin on Sept. 22, 1954, and will end June 15, 1955. The next sophomore session will begin Sept. 8, 1954, and will end June 17, 1955. The next session for juniors will begin Sept. 8, 1954; closing date to be announced. The next senior session will begin Aug. 30, 1954, and will end June 15, 1955. The dean is Joseph T. Wearn, M.D.

Columbus

Ohio State University College of Medicine, Neil and Eleventh Avenues, Zone 10.—The present College of Medicine became a part of the Ohio State University in 1914. It incorporates all the previous medical college interests in central Ohio, standing upon a foundation of six medical schools: the Medical Department of Willoughby University of Lake Erie, 1834-1846; the Willoughby Medical College of Columbus, 1846-1847; the Starling Medical College; 1847-1907; the Columbus Medical College, 1875-1892; the Ohio Medical University, 1892-1907; Starling-Ohio Medical College 1907-1914. Graduates of these colleges by action of the board of trustees are considered alumni of the Ohio State University. Coeducational since organization. Three years of collegiate work are required for admission. Tuition fees average $525 per academic year and $255 additional for nonresidents. The registration for 1953-1954 was 575; graduates 136. The last session began Sept. 29, 1953, and ended June 11, 1954. The next session will begin Sept. 28, 1954, and end June 10, 1955. The dean is Charles A. Doan, M.D.

OKLAHOMA

Oklahoma City

University of Oklahoma School of Medicine, 801 Northeast Thirteenth Street, Zone 4.—Organized in 1900. Until 1910 gave only the first two years of the medical course at Norman, Okla., after which a clinical department was established at Oklahoma City through consolidation with the Medical School of Epworth University. The first class graduated in 1911. Coeducational since organization. A new medical school building and a second teaching hospital became available in 1928, and since September of that year the entire four year course has been given in Oklahoma City. Prerequisites for admission are three years of college work. The fees for residents of Oklahoma are $400; nonresidents $800. The registration for 1953-1954 was 380; graduates 81. The last session began Sept. 14, 1953, and ended June 6, 1954. The next session for freshmen and sophomores will begin Sept. 13, 1954; the junior class will begin on Sept. 1, 1954; the senior session began June 21, 1954; all sessions end on June 5, 1955. The dean is Mark R. Everett, Ph.D.

OREGON

Portland

University of Oregon Medical School, 3181 Southwest Sam Jackson Park Road, Zone 1.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. Entrance requirement is three years of collegiate work. The total fees are $456 a year for residents of Oregon and $180 a year additional for nonresidents, plus a breakage deposit of $15 a year for the first two years. The registration for 1953-1954 was 267; graduates 56. The last session began Sept. 30, 1953, and ended June 18, 1954. The next session will begin Sept. 29, 1954, and will end June 11, 1955. The dean is D. W. E. Baird, M.D.

PENNSYLVANIA

Philadelphia

Hahnemann Medical College and Hospital of Philadelphia, 235 North Fifteenth Street, Zone 2.—Formed by the successive union of several institutions. The earliest original charter was obtained in 1848. The name Hahnemann Medical College was taken by one of these institutions in 1867. The present name was assumed in 1885. The first class graduated in 1849. Coeducational since 1941. A minimum of three years of collegiate work in an approved college of arts and sciences is required for admission. Fees for 1954-1955 session respectively for the first, second, third, and fourth year classes are $847, $847, $847 and $877. The registration for 1953-1954 was 393; graduates 99. The last session began for all students Sept. 14, 1953, and ended for the first, second, and third year classes on June 12, 1954, and for the fourth year class on June 17, 1954. The next session for all classes will begin Sept. 13, 1954, and will end for the first, second, and third year classes June 11, 1955, and for the fourth year class June 16, 1955. The dean is Charles L. Brown, M.D.

Jefferson Medical College of Philadelphia, 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually, beginning in 1826. In 1838 a separate charter was granted without change of title, since which time it has continued under the board of trustees. For the class entering in 1954 the minimum entrance requirements will be three years of college work. The tuition fee averages $800 a year. The registration for 1953-1954 was 666; graduates 163. The last session began for all classes on Sept. 14, 1953. Classes ended for freshmen and sophomores on June 12, 1954, for juniors on June 5, 1954, and for seniors on June 18, 1954. Graduation was June 18, 1954. The next session will begin for all classes on Sept. 13, 1954, and will end for freshmen and sophomores on June 11, 1955, for juniors on June 4, 1955, and seniors on June 17, 1955. The dean is George Allen Bennett, M.D.

Temple University School of Medicine, 3400 North Broad Street, Zone 40.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. Three years of collegiate work are required for admission. The fees average $800 per academic year. The registration for 1953-1954 was 516; graduates 132. The last session began Sept. 7, 1953, and ended June 12, 1954, for freshmen, sophomores, and juniors. The senior class began Sept. 7, 1953, and ended June 17, 1954. The current session began Sept. 7, 1954, and will end June 16, 1955. The vice-president and dean is William N. Parkinson, M.D.

University of Pennsylvania School of Medicine, Thirty-Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title

was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916, it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. Three years of collegiate work are required for admission. The tuition fee is $850, with a deposit of $15, a general fee including student health of $70, and a matriculation fee of $5. The registration for 1953-1954 was 502; graduates 127. The last session began Sept. 8, 1953, and ended June 12, 1954. The current session began Sept. 7, 1954, and will end June 11, 1955. The dean is John McK. Mitchell, M.D.

Woman's Medical College of Pennsylvania, 3300 Henry Avenue, Zone 29.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. At least three years of collegiate work are required for admission and candidates with a degree are given preference. The curriculum covers three years of 36 weeks each and one year of 40 weeks. Total fees are $860 yearly. The registration for 1953-1954 was 181; graduates 43. The last session began Aug. 10, 1953, for the fourth year, Sept. 10, 1953, for third year, and Sept. 14, 1953, for first and second year. The current session began Aug. 2, 1954, for the fourth year, Sept. 9, 1954, for second and third year and will begin Sept. 13, 1954, for first year and end June 11, 1955. The dean is Marion Fay, Ph.D.

Pittsburgh

University of Pittsburgh School of Medicine, 3941 O'Hara Street.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. Entrance requirements are three years of collegiate work. The total fees are $700 each year. The registration for 1953-1954 was 385; graduates 98. The last session began Sept. 14, 1953, and ended June 9, 1954. The next session will begin on Sept. 13, 1954, and will end June 15, 1955. The dean is William S. McElroy, M.D.

SOUTH CAROLINA

Charleston

Medical College of South Carolina, 16 Lucas Street, Zone 16.—Organized 1823. The first class graduated in 1825. In 1832 a medical college bearing the title Medical College of the State of South Carolina was chartered and the two schools continued as separate institutions until they merged in 1838. Name changed by Act of General Assembly in February, 1952, to Medical College of South Carolina. Classes were graduated in all years except 1862 to 1865, inclusive. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. At least three years of collegiate work are required for admission. The total fees average $432 each year for residents of South Carolina and $1,532 for nonresidents of the state. The registration for 1953-1954 was 275; graduates 55. The last session began on Sept. 24, 1953, and ended June 3, 1954. The current session began on Sept. 9, 1954, and will end June 2, 1955. The dean is John T. Cuttino, M.D.

TENNESSEE

Memphis

University of Tennessee College of Medicine, 847 Union Avenue, Zone 3.—Organized in 1876, at Nashville as Nashville Medical College. First class graduated in 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913, Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. Three years of collegiate work are required for admission. The B.S. degree is conferred on students completing the science-medical curriculum of the university. The fees are $450 for residents and $675 for nonresidents. The registration for 1953-1954 was 750; graduates 159. During the next academic year the quarters begin September, January, March, and July. The vice president and dean is O. W. Hyman, Ph.D.

Nashville

Meharry Medical College, Eighteenth Avenue North and Meharry Boulevard, Zone 8 (For Negro Youth).—Organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. Three years of college work in a school of liberal arts are required for admission. Tuition and fees are: first year $630; second year $620; third year $610; fourth year $625. The curriculum covers four academic years of 34 weeks each. In September, 1942, Meharry Medical College instituted the quarter system. The registration for 1953-1954 was 257; graduates 63. The last session began on Sept. 28, 1953, and ended on June 7, 1954. The next session begins Sept. 27, 1954, and will end on June 6, 1955. The dean is Daniel T. Rolfe, M.D.

Vanderbilt University School of Medicine, Twenty-first Avenue South at Edgehill, Zone 5.—The school was founded in 1874. The first class graduated in 1875. Coeducational since 1925. For matriculation, students must be graduates of collegiate institutions of recognized standing or seniors *in absentia,* who will receive the bachelor's degree from their college after having completed successfully one year of work in the school of medicine. The course covers four academic years, 3 of 9 months each and one of 10 months. The fees average $810 per academic year. The registration for 1953-1954 was 206; graduates 54. The last session began Sept. 28, 1953, and ended June 6, 1954. The next session will begin Sept. 27, 1954, and will end June 5, 1954. The dean is John B. Youmans, M.D.

TEXAS

Dallas

Southwestern Medical School of the University of Texas, 2211 Oak Lawn.—Organized in 1943. The first class graduated March 20, 1944. Coeducational since organization. Became a branch of the University of Texas, Sept. 1, 1949. The medical school is operated on the regular program offering three terms of 12 weeks each per academic year. The tuition fees for residents average $125 per year. The nonresident fee is $375 per year. Three years of college work are required for admission. The registration for 1953-1954 was 394; graduates 98. The last session began Sept. 9, 1953, and ended June 7, 1954. The current session began Sept. 8, 1954 and will end June 10, 1954. The assistant dean and chairman of the executive committee is A. J. Gill, M.D.

Galveston

University of Texas School of Medicine, 900 Strand Street.—Organized in 1890. The first class graduated in 1892. Coeducational since organization. Three years of collegiate training are required for admission. The fees average $103 per academic year, including health fees for medical care and hospitalization. The registration for 1953-1954 was 599; graduates 132. The last session began on Sept. 15, 1953, for freshmen, Sept. 21, 1953, for sophomores, and July 6, 1953, for juniors and seniors; all classes ended June 5, 1954. The next freshman class will matriculate Sept. 14, 1954, and the sophomore and junior classes will matriculate on Sept. 20, 1954; the seniors matriculated July 6, 1954; all classes will end June 4, 1955. The executive director is Chauncey D. Leake, Ph.D.

Houston

Baylor University College of Medicine, Texas Medical Center.—Organized in 1900 at Dallas as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. The school was moved to Houston in 1943. Coeducational since organization. The first class graduated in 1903. Entrance requirements are three years of collegiate work. The course covers four years of eight months each. The fees are respectively $790, $780, $780, $805. The registration for 1953-1954 was 358; graduates 86. The last session began Sept. 14, 1953, and ended May 31, 1954. The next session will begin Sept. 13, 1954, and will end May 30, 1955. The dean is Stanley W. Olson, M.D.

UTAH

Salt Lake City

University of Utah College of Medicine.—Organized in 1905. Coeducational since organization. Four year curriculum established March, 1943. Three years of collegiate work are required for admission. The next freshman class will be admitted in September, 1954. All subsequent freshmen classes will begin in September of each year. Classes are scheduled during three academic quarters (12 weeks) each calendar year. Applications for admission (complete) must be submitted prior to October 31 preceding opening date. The fees average $480 (resident), and $830 (nonresident). The registration for 1953-1954 was 198; graduates 45. The next session for freshmen, sophomores, juniors, and seniors will begin in September, 1954, and end in June, 1955. The dean is John Z. Bowers, M.D.

VERMONT

Burlington

University of Vermont College of Medicine, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853, and classes were graduated in 1954 and in all subsequent years. Coeducational since 1920. Three years of college work are required for admission. For residents of Vermont the tuition fee averages $567 per session. Nonresidents are charged an additional $433 each session. Registration for 1953-1954 was 189; graduates 43. The last session for freshmen, sophomores, and juniors began Sept. 11, 1953, and ended for the freshmen and sophomores on June 13, 1954; for the juniors on Aug. 28, 1954. The last senior class began June 29, 1953, and graduated June 13, 1954. The current session for all classes began Sept. 10, 1954, and will end on June 12, 1955, for all except the juniors. The junior year ends on Aug. 27, 1955. The dean is George A. Wolf, Jr., M.D.

VIRGINIA

Charlottesville

University of Virginia School of Medicine.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. Three years of college work are required for admission. For residents of Virginia the tuition and other required fees are $465 per academic year; for nonresidents, $865. The registration for 1953-1954 was 292; graduates 70. The last session began Sept. 20, 1953, and ended June 14, 1954. The next session will begin Sept. 19, 1954, and end June 13, 1955. The dean is Thomas H. Hunter, M.D.

Richmond

Medical College of Virginia, Twelfth and Broad Streets.—Organized in 1838 as the Medical Department of Hampden-Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was

merged. Coeducational since 1918. Classes were graduated in 1838 and in all subsequent years. Three years of collegiate work, as a minimum, are required for admission. Preference, however, is given to applicants with a baccalaureate degree. Fees average $563 per academic year. Nonresidents are charged an additional $325 each year. The registration for 1953-1954 was 372; graduates 100. The last session began Sept. 14, 1953, for second, third, and fourth year classes and ended June 1, 1954. The last session for the first year class began Sept. 10, 1953, and ended June 1, 1954. The subsequent session began Sept. 9, 1954, for the first year class and will begin Sept. 13, 1954, for the second, third, and fourth year classes and will end May 31, 1955. The dean is John B. Truslow, M.D.

WASHINGTON

Seattle

University of Washington School of Medicine, Zone 5.—Established by the legislature in 1945 and organized as one of the professional schools in the Division of Health Sciences of the University of Washington in 1946. The first class graduated in 1950. Coeducational. The minimum requirement for admission is three years of collegiate work. Tuition fees are $390 each year for residents of Washington and Alaska and $585 for nonresidents of these areas. Registration for 1953-1954 was 287; graduates 68. Classes are limited to 75. Primary consideration is given to residents of Washington and Alaska, although a certain number of out of state applicants are accepted each year, with preference to qualified students from neighboring states, territories, and provinces where no medical school exists. The last session began Sept. 21, 1953, and ended June 12, 1954. The next session will begin Sept. 29, 1954, and will end June 11, 1955. The dean is George N. Aagaard, M.D.

WISCONSIN

Madison

University of Wisconsin Medical School, 418 North Randall Avenue.—Organized 1907. Gave only the first two years of medical course until 1925, when the clinical years were added. Coeducational since organization. The entrance requirement is three years of collegiate work. Fees for the first, second, and third years $340, for the fourth year $250 per academic year for residents. An additional fee of $320 per year is charged nonresidents. Registration for 1953-1954 was 318; graduates 79. The last session for freshman, sophomore, and junior students began Sept. 21, 1953, and ended June 14, 1954. The last senior class began June 29, 1953, and ended June 18, 1954. The next freshman, sophomore, and junior classes will begin Sept. 20, 1954, and will end June 14, 1955. The senior class began June 28, 1954, and will end June 17, 1955. The dean is William S. Middleton, M.D.

Milwaukee

Marquette University School of Medicine, 561 North Fifteenth Street, Zone 3.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. Three years of collegiate work are required for admission. The fees are $850 per academic year. The registration for the 1953-1954 session was 391; graduates 95. The last session began Sept. 14, 1953, and ended June 4, 1954. The last senior class began June 8, 1953, and ended June 5, 1954. The next session for freshman, sophomore, and junior students will begin Sept. 13, 1954, and will end June 6, 1955. The 1954-1955 session for seniors began on June 7, 1954, and will end June 3, 1955. The dean is John S. Hirschboeck, M.D.

PUERTO RICO

San Juan

University of Puerto Rico School of Medicine, Ponce de León Avenue.—Organized in 1949, the first class entered in August, 1950, and graduated June 1, 1954. It evolved from the School of Tropical Medicine. Coeducational since organization. Three years of collegiate work are required for admission. Annual fees amount to $539. The registration for 1953-1954 was 184; graduates 45. The last session began Aug. 17, 1953, and ended May 21, 1954. The current session began Aug. 16, 1954, and will end May 20, 1955. The dean is E. Harold Hinman, M.D.

APPROVED MEDICAL SCHOOLS IN CANADA

ALBERTA

Universtiy of Alberta Faculty of Medicine, Edmonton.—Organized in 1913. Coeducational since organization. Has given complete medical course since 1924. Three years of college work are required for admission. Tuition for first year is $300 per session, for second year, $450 per session, and for third and fourth years, $500 per session. The registration for 1953-1954 was 236; graduates 61. The last session began Sept. 1, 1953, and ended April 30, 1954. The current session began Sept. 7, 1954, and will end April 30, 1955. The dean is John W. Scott, M.D.

BRITISH COLUMBIA

University of British Columbia Faculty of Medicine, Vancouver.—Organized in 1949. Coeducational. First class graduated in 1954. Three years of arts required for matriculation. The regular medical course extends through four years and leads to the M.D. degree. The first two years of the course are taught almost entirely on the university campus; the third and fourth years are taught at the Vancouver General Hospital and other affiliated institutions including Shaughnessy Hospital, St. Paul's Hospital, Children's Hospital, Grace Hospital, the Provincial Mental Hospital, and the Western Society for Rehabilitation. The fees are $455 yearly for both residents and nonresidents. The registration for 1953-1954 was 233; graduates 54. The last session began Sept. 7, 1953, and ended May 15, 1954. The current session for all classes began on Sept. 8, 1954, and will end May 14, 1955. The dean is Myron M. Weaver, M.D.

MANITOBA

University of Manitoba Faculty of Medicine, Bannatyne Avenue, Winnipeg.—Organized in 1883 as Manitoba Medical College. First class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. Matriculation requirements include three years of college work in the faculty of arts and sciences of a recognized university. The course extends over four years of eight months each and a hospital internship. The fees average $450 yearly. The registration for 1953-1954 was 267; graduates 58. The last session began Sept. 14, 1953, and ended on May 22, 1953. The next session will begin on Sept. 13, 1954, and will end on May 21, 1955. The dean is Lennox G. Bell, M.D.

NOVA SCOTIA

Dalhousie University Faculty of Medicine, University Avenue, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. Requires for matriculation two years of arts, increasing with the medical class entering in 1956 to three years. The new ruling will thus apply to students starting their premedical work in 1954. The regular medical course covers four years and a hospital internship of one year approved by the medical faculty. The fees average $440 yearly; nonresidents $250 additional fee. The last session for freshmen, sophomores, juniors, and seniors began Sept. 8, 1953, and for internes May 3, 1953; all classes ended May 11, 1954. The registration for 1953-1954 was 212; graduates 53. The present session for internes began May 3, 1954, and for the first four years Sept. 7, 1954, and will end May 17, 1955. The dean is C. B. Stewart, M.B.

ONTARIO

Queen's University Faculty of Medicine, Kingston.—Organized in 1854. First class graduated in 1855 and a class graduated each subsequent year. The course consists of six sessions of 32 teaching weeks, the sixth session being devoted entirely to clinical work in the hospitals affiliated with the university. The latter is not considered an internship. Fees for each of six years amount to $469.80. The degrees awarded are M.D., C.M. Freshmen will be admitted annually. Registration for 1953-1954 was 359; graduates 53. The last session began Sept. 14, 1953, and ended May 12, 1954. The next session will begin Sept. 20, 1954, and will end May 7, 1955. The last convocation was held June 5, 1954. The dean is G. Harold Ettinger, M.D.

University of Ottawa Faculty of Medicine, Ottawa.—Organized in September, 1945. The degree of M.D. is conferred after one year premedical studies, four years medicine, and one year of internship. The minimum academic requirements for admission to the premedical year are the Ontario grade 13 honour matriculation, or equivalent certificates. Students who have obtained their bachelor degree in arts or in science and who have completed the required courses in biology, chemistry, and physics may be admitted to the first year of medicine. The registration for 1953-1954 in the medical and premedical years was 248; graduates 47. The current session for the premedical year began on Sept. 9, 1954, and for first, second, third, and fourth medical years, on Sept. 7, 1954. Internship is from May 1 to April 30. The session for the premedical year will end in May, 1955; for first, second, and third medical years in June, 1955, and the fourth medical year in April, 1955. Students graduate in the first week of June. The dean is A. L. Richard, M.D.

University of Western Ontario Faculty of Medicine, 346 South Street, London.—Organized in 1881 as the Western University Faculty of Medicine. First class graduated in 1883 and a class graduated each subsequent year. Present title in 1923. The Faculty of Medicine has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The normal course of study covers two honor college years of nine months each and four years of nine months each in the Faculty of Medicine. The total fees for the last four years are $550 a year. The registration for 1953-1954 was 237; graduates 61. The last session began Sept. 14, 1953, and ended May 26, 1954. The next session will begin Sept. 13, 1954, and end May 25, 1955. The dean is J. B. Collip, M.D.

University of Toronto Faculty of Medicine, University Grounds, Zone 5, Toronto.—Founded in 1843 as the Medical Faculty of King's College. Discontinued in 1853. Reestablished in 1887. In 1902 Victoria University

Medical Department and in 1903 the Medical Faculty of Trinity University became affiliated. Coeducational since 1903. The degree of M.D. is conferred after four years in the study of medicine. Students are admitted to the medical course following grade 13 examinations of the province of Ontario, and after two years in the study of premedical requisites in the University of Toronto. A limited number of students, who have a degree in arts from a recognized university, and who have covered the necessary work in the humanities and sciences, may be admitted to the first medical year. The B.Sc. (Med.) degree may be conferred for special work or investigation as a graduate degree, or under certain circumstances for an extra year's work as an undergraduate. The registration for 1953-1954 in the medical and premedical years was 851; graduates 166. The next session for first and second premedical years will begin on Sept. 22, 1954, and for first, second, third, and fourth medical years on Sept. 20, 1954. The session for premedical years will end on April 30, 1955, and for medical years on May 14, 1955. Students will graduate annually in June. The dean is J. A. MacFarlane, M.B.

QUEBEC

McGill University Faculty of Medicine, 3640 University Street, Montreal.—Founded in 1823 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College. Coeducational since 1917. Three years of collegiate work are required for admission. The total fees for each of the four medical years are $593. The registration for 1953-1954 was 440; graduates 110. The last session began Sept. 9, 1953, and ended June 5, 1954, for the first three classes and May 1, 1954, for the senior class. The current session began Sept. 8, 1954, and will end June 4, 1955, for the first three classes and April 30, 1954, for the seniors. The dean is G. Lyman Duff, M.D.

University of Montreal Faculty of Medicine, 2900 Mount Royal Boulevard, Montreal.—Organized in 1843 as the Montreal School of Medicine and Surgery. In 1891, by Act of Parliament, was merged with the Faculty of Medicine of Laval University at Montreal (organized in 1878). Present name by Act of Parliament in 1920. A class was graduated in 1843 and each subsequent year. Coeducational since 1925. The requirements for admission are: B.A. degree or its equivalent, with a supplementary year in the Faculty of Pure Science or an entrance examination on the premedical subjects. An internship is required for graduation. The fees are $390 yearly for residents, and $465 yearly for nonresidents. The registration for 1953-1954 was 423; graduates 99. The last session began Sept. 11, 1953, and ended May 28, 1954. The next session will begin Sept. 14, 1954, and will end May 27, 1955. The dean is Wilbrod Bonin, M.D.

Laval University Faculty of Medicine, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The premedical requirement is a B.A. degree. The medical course is six years in length, including a one year internship in affiliated teaching hospitals. The first year (premedical) may be avoided by a special examination. The fees for each of the medical years average $400 for residents of Canada. Nonresidents are charged an extra fee of $200 each year. The registration for 1953-1954 was 599; graduates 134. The last session began Sept. 9, 1953, and ended June 1, 1954. The current session began Sept. 8, 1954, and will end June 1, 1955. The dean is Charles Vézina, M.D.

APPROVED SCHOOLS OF THE BASIC MEDICAL SCIENCES IN THE UNITED STATES

MISSISSIPPI

University

University of Mississippi School of Medicine.—Organized in 1903. Coeducational since organization. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. Entrance requirement is three years of collegiate work. Fees average $410.50 annually. There is a nonresident additional fee of $200. The school operates on an accelerated program by accepting two freshman classes each session. Registration for 1953-1954 was 113. Approximately 28 students will register Aug. 2, 1954. The last session for freshmen began July 13, 1953, and ended May 1, 1954. An additional freshman class was admitted Feb. 1, 1954, and will end Oct. 16, 1954. The sophomore session began May 24, 1954, and will end Jan. 29, 1955. An additional sophomore session will begin Nov. 8, 1954, and will end July 16, 1955. The dean is David S. Pankratz, M.D.

MISSOURI

Columbia

University of Missouri School of Medicine.—Organized at St. Louis in 1845; was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. The entrance requirement is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. Total fees for the first year are $284, for the second year $270. The registration for 1953-1954 was 85. The last session began Sept. 15, 1953, and ended June 12, 1954. The next session will begin Sept. 13, 1954, and will end June 8, 1955. The dean is Roscoe L. Pullen, M.D.

NEW HAMPSHIRE

Hanover

Dartmouth Medical School.—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Courses of the third and fourth years were discontinued in 1914. Three years of college work and candidacy for the bachelor's degree are required for admission. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year. The tuition is $800 for each year. The registration for 1953-1954 was 46. The last session began on Sept. 20, 1953, and ended June 13, 1954. The next session will begin Sept. 19, 1954, and will end June 12, 1955. The dean is Rolf C. Syvertsen, M.D.

NORTH DAKOTA

Grand Forks

University of North Dakota School of Medicine.—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years work in a college of liberal arts are required for admission. The B.S. degree in combined arts-medical course is conferred at the end of the second year. The fees are $138 each year for resident students and $223 for nonresidents. The registration for 1953-1954 was 70. The last session began Sept. 18, 1953, and ended June 5, 1954. The current session began Sept. 1, 1954, and will end May 26, 1955. The dean is Theodore H. Harwood, M.D.

SOUTH DAKOTA

Vermillion

University of South Dakota School of Medical Sciences.—Organized in 1907 as the University of South Dakota School of Medicine. Present title in 1937. Coeducational since organization. Offers only the first two years of medical course. Three years work in a college of liberal arts are required for admission. Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to an A.B. degree; the B.S. degree is conferred at the end of the second year on those students who do not hold a combination (Arts and Sciences and Medicine course) A.B. degree. The tuition is $270 for first year residents and $360 for second year residents; $480 for first year nonresidents and $570 for second year nonresidents. Registration for 1953-1954 was 63. The last session began Sept. 1, 1953, and ended June 7, 1954. The current session for first and second year students commenced Aug. 30, 1954, and will end June 6, 1955. Following the didactic work in the second year, the sophomores are assigned to a general practitioner to serve on a one month preceptorship program. The dean is W. L. Hard, Ph.D.

WEST VIRGINIA

Morgantown

West Virginia University School of Medicine.—Organized in 1912. Gives the first two years of the medical course, but agreement has been made for the transfer of 25 students each year to the Medical College of Virginia. Coeducational since organization. Entrance requirements are three years of collegiate work. The B.S. degree is conferred at the end of the second year. Fees for residents of the state are, respectively, $258 and $268; nonresidents $442 additional each year. The registration for 1953-1954 was 61. The last session began Sept. 14, 1953, and ended May 31, 1954. The next session will begin Sept. 13, 1954, and will end May 30, 1955. The dean is Edward J. Van Liere, M.D.

APPROVED SCHOOL OF THE BASIC MEDICAL SCIENCES IN CANADA

SASKATCHEWAN

University of Saskatchewan College of Medicine, Saskatoon.—Organized in 1926. Coeducational. Will offer a full medical course; first graduates 1957. Two years of university work after senior matriculation is required for admission. The B.A. degree is conferred at the end of the second year. The fees are $390.50. The registration for 1953-1954 was 65. The last session began Sept. 23, and ended June 19. The next session will begin Sept. 22, 1954, and will end June 18, 1955. The dean is J. Wendell Macleod, M.D.

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION
535 N. DEARBORN ST. . . . . CHICAGO 10, ILL.
Editor . . . . . AUSTIN SMITH, M.D.
Associate Editor . . . . . JOHNSON F. HAMMOND, M.D.
Editor for Medical Literature Abstracts . GEORGE HALPERIN, M.D.
Assistant Editor . . . . . WAYNE G. BRANDSTADT, M.D.

Subscription price . . Fifteen dollars per annum in advance
Cable Address . . . . . "Medic, Chicago"

PROGRESS IN MEDICAL EDUCATION

This issue of THE JOURNAL includes the 54th Annual Report on Medical Education in the United States and Canada prepared by the Council on Medical Education and Hospitals of the American Medical Association and developed to inform the profession and the public of the current status, development, and trends in this important area of education. Evaluation of the annual reports of activities and statistics, as submitted by the medical schools, indicates that the past year has been one of steady progress and that the period immediately ahead holds promise of continuous growth and advance in the field of medical education and in the interest of the general public welfare.

The past year has witnessed completion of the basic organization of faculty and four year curriculums with the graduation of their first class of physicians in three medical schools: the University of North Carolina, the University of Puerto Rico, and the University of British Columbia. Thus there are now 74 approved four year medical schools, 6 schools of basic medical science in the United States, and 11 approved four year medical schools and one school of basic medical science in Canada. Currently, eight other new four year schools of medicine are in process of actual development, and two other developmental programs may be added during the course of the next year. The University of California at Los Angeles will graduate its first class in 1955, Miami in 1956, and, if current developments proceed on schedule, Mississippi and Missouri in 1957. The University of Florida, West Virginia, Albert Einstein, and Seton Hall medical schools will follow closely. The University of Kentucky will seek funds from the next legislature to establish a four year school, and the North Dakota legislature has passed legislation that will extend their current basic medical science school into a full four year medical school program. Medical school enrollments have steadily increased over the past 20 years as existing schools have augmented their faculties and facilities and new schools have been developed. This, together with the currently developing programs and those now under advisement, assures the continued steady increase of undergraduate medical students and larger numbers of graduates annually for many years ahead. Proportionately, the rise in the number of medical graduates should, therefore, be relatively more rapid than general population increase in the course of the next 6 to 10 years.

In line with the increased enrollments and larger graduating classes is the fact that attrition rates in medical schools are much lower than was the case some years ago. This is a direct reflection of the interest and care and improved student counseling and advisement that medical schools have exercised in the selection of students in an effort to reduce the wastage that earlier accompanied less careful evaluation of the potentialities of entering students.

The rapid advances in knowledge during recent years have so changed diagnostic techniques and therapeutic approaches that schools have been constantly challenged to reevaluate their teaching programs and to revise curriculums and teaching methods in keeping with these dynamic developments. Intellectual ferment prevades the field of medical education, and interesting experimental programs devised to improve undergraduate, graduate, and postgraduate opportunities in this field are being conducted on a wide scale. The intercommunication so effectively initiated through the conferences and institutes in such fields as psychiatry, public health, and preventive medicine, and the annual teaching institutes started by the Association of American Medical Colleges in 1953 have been potent factors in accelerating curriculum reevaluation and stimulating experiments in medical education.

New emphasis on the patient as a person, with the focus on man in his environment, has become the nucleus of many of these new experimental approaches. This is reflected in the efforts to reduce departmental barriers and improve integration and correlation of many areas of teaching too frequently rigidly departmentalized in the past through reduction of didactic teaching, strengthening of clinical clerkships, better organization and utilization of the potentialities of outpatient clinic teaching, home study and hospital extension programs and preceptorships, and over-all improvement in supervision of such programs.

There has also been improvement in medical school financing. This has been especially notable in the field of outside support for research and certain special areas of teaching. In their efforts to improve opportunities in medical education, to adequately support existing faculty personnel, and to introduce new departments, sections, or divisions in keeping with advancing knowledge, medical schools will face a continuing need for more adequate financing as they endeavor to serve the public in the education of the physician of tomorrow and continue to search for new knowledge essential to further improvement in medical care. This is a challenge that the public must understand and share so as to assure the continuation of the high standards of professional care and medical education that characterize American medicine.

The American public, the medical profession, and the medical schools have every right to take genuine pride in the tremendous advances that have been made in medical education during the course of the past half century. The American public should be deeply conscious of the high quality of medical care to which it is privileged. This high quality of medical care can be available only through the education of medical personnel fully informed and prepared to meet the constant challenges that confront them in this rapidly changing and dynamic

era in which they live and work today. As Whitehead[1] has indicated, in education imagination is a contagious disease. It cannot be measured by the yard or weighed by the pound and then delivered to the students by members of the faculty. It can be communicated only by a faculty whose members themselves wear their learning with imagination. Thus, in maintaining the high objectives of the best possible medical care, medical education is constantly confronted with the need for imaginative planning that can guarantee for the period ahead advances of the same order of magnitude that have been accomplished during the first half of the 20th century.

OBJECTIVES IN OUTPATIENT TEACHING

During recent years the new diagnostic techniques and new therapeutic agents and procedures have made it possible to treat many patients in outpatient departments who, prior to these developments, occupied hospital ward beds. With increasing numbers of ambulatory patients cared for in outpatient clinics, this aspect of medical care assumes ever greater importance. Numerous medical educators have long felt that there was room for improvement in the care of such ambulatory patients and have recognized the favorable position of the outpatient clinic as a learning experience for the medical student.

In the past many teachers in the clinical fields have preferred teaching in the hospital wards because of their superior organization, better continuity of immediate "follow-through" teaching, and what appeared to be a greater educational challenge. The rapid increase in the number and importance of the various medical specialties over the past half century has resulted in outpatient teaching schedules in which the student spent a few weeks in medicine, a similar period in surgery, then a shorter period in pediatrics and obstetrics, after which he passed in rapid succession through such specialties as neurology, psychiatry, dermatology, orthopedics, urology, ophthalmology, and otolaryngology. This kaleidoscopic experience lacked continuity of patient care throughout any given illness or complaint and consequently tended to fail in many instances to develop in the student a sense of responsibility for patients as persons.

At the University of Oklahoma, the University of Pennsylvania, Boston University, Cornell, and other institutions, student assignments to outpatient clinic experiences are being radically modified to permit more adequate continuity of "follow-through" between students and their patients. In one of these programs, although the student works day-by-day on a given service such as medicine or surgery, this outpatient assignment is merely for the purpose of maintaining a proper balance in his experience and in the assignment of new patients. Once the initial contact has been made between the patient and his student physician, the latter follows the patient throughout his full cycle of illness regardless of what special diagnostic procedures or treatment may be required. In another institution the traditional "block system" of fourth year outpatient assignment has been abolished and replaced by an assignment concurrently to all outpatient departments. This program has also allowed the continuity of patient-student relationship throughout the entire outpatient experience.

Wherever this type of program has been carefully planned and adequately supervised, both faculty and students have been enthusiastic over the results. After a single year of experience one faculty group indicated that they are firmly convinced that the concept is basically sound from both medical care and educational aspects. There is no question that the potentialities of outpatient teaching have been greatly enhanced in recent years. On the other hand, these opportunities can be only as good as the planning, personnel, and supervision that underlie this development and wherever initiated deserve the overall study and implementation that will make it possible to realize their maximum potentialties in medical care and medical education.

PREPARATION FOR GENERAL PRACTICE

There has long been a widespread recognition that completion of medical school work does not in itself constitute sufficient preparation for the practice of medicine. Perhaps the most noteworthy evidence of this fact is illustrated by the unanimous action of the graduates of 1952-1953, none of whom went into practice without further formal training.

Although in the past it has been customary for physicians to enter general practice after one year of internship, there is a growing realization that this no longer represents adequate preparation. Medical students interested in devoting their lives to the general practice of medicine and medical school faculties have both expressed this realization. Many physicians now in general practice concur in this observation, and the educational requirements necessary for continued membership in the American Academy of General Practice are at least an indirect acknowledgment of this need by an organized group of thoughtful participants in this field of medical practice.

In previous years, many medical schools stated as the major objective of their undergraduate teaching programs the preparation of students for the general practice of medicine. Currently, however, most medical faculties embrace as the major objective of undergraduate medical education the provision of a solid framework of fundamental principles applicable to all areas of medicine. This implies that the student must build on this framework through further training after graduation the additional appurtenances necessary for sound practice in whatever field he chooses for his career.

Career decisions are made, for the most part, during the medical school or internship period. An intelligent selection of any career is difficult without some knowledge of what it constitutes. Until recently medical students and most interns came in contact with only the medical specialist. Now, through preceptorship programs, general practice outpatient teaching clinics, and home care programs, more and more students are afforded an opportunity for intimate association with physicians in general practice. Armed with a better understanding of the specialist and the physicians in general practice through

1. Whitehead, A. N.: The Aims of Education, and Other Essays, New York, the Macmillan Company, 1929.

association with both groups and their patients, a wiser choice of a future career should be possible.

Inculcation of sound principles and attitudes is indeed a major task to accomplish during four years in medical school. Most would agree that, if this is accomplished, the medical schools have rendered a great service; however, the total educational needs of the students imply the requirement of a further educational program to provide opportunity for more detailed knowledge. Medical schools have long accepted this necessary graduate teaching area in the medical specialties as part of their responsibility but have not felt an equal responsibility in the field of general practice.

The educational demands of students preparing for the special fields of medicine have undoubtedly contributed to the willingness of the medical schools to supply this demand. It is heartening to note that, as students interested in general medical practice have evinced a desire for training beyond the internship, there has also developed in medical schools a desire to meet this new demand. Several programs for graduate training in general practice have already been established by medical school faculties in their associated hospitals. In general, it is felt that these programs are successful, although it is doubtful if any of the participating institutions feel that all major problems have been resolved.

The demands of students in the specialty fields of medicine ultimately contributed to the establishment of specified training programs and standards of practice in those fields. There are many difficult obstacles to the similar development of specified graduate training programs and standards of practice in the field of general medicine. Much could be said in favor of such a development, and recent occurrences could conceivably be logical precursors to such a step.

TEACHING LEGAL MEDICINE IN MEDICAL SCHOOLS

Because of the fact that in the practice of medicine no physician can avoid contact with the law, it is important that medical students have basic instruction in regard to their legal duties to patients, their communities, and their government by the time they receive their professional degrees. Furthermore, they should also possess sound basic knowledge of the pathology of trauma.

On the basis of an analysis made in 1952 [1] of what is being taught in the field of legal medicine, a Committee on Medicolegal Problems of the American Medical Association obtained information suggesting the need for additional emphasis on this field in some institutions. At that time 15 schools had departments of legal medicine and 7 schools offered elective courses only. Of the remaining institutions, 6 schools offered electives in addition to the required basic course in legal medicine, 5 offered comprehensive graduate courses, 16 presented undergraduate instruction that on the basis of current standards appeared to be satisfactory, and 23 presented definitive or organized instruction in medical jurisprudence alone. Twenty of the schools described additional courses other than in medical jurisprudence that appeared to be insufficient from the point of view of adequate instruction in legal medicine.

Rapid advances in knowledge and its application to medical care have presented medical educators with increasingly difficult problems in curriculum planning. Every curriculum committee is confronted with the question of what can be logically modified or deleted as well as what might be added to achieve a program to meet current needs. Reasonable indoctrination in the fundamentals of legal medicine would appear to be essential for all medical students. The committee referred to has prepared a suggested basic course of 20 hours for fourth year students that should amply cover the need if carefully planned and adequately taught. The program merits serious thought on the part of curriculum committees considering this area of their undergraduate programs.

DEVELOPING PROFESSIONAL ETHICS

There is no doubt but that in this difficult period of world turmoil, with its political and social upheaval, there is need for reemphasis on moral and ethical values in all areas of human endeavor. It is comparatively easy to outline the basic principles of ethics in the profession of medicine or, for that matter, in any field of activity where there is general agreement on the fundamentals of correct conduct; however, the development of proper ethical concepts and conduct within the individual demands far more than lectures or the mere reading or discussion of principles. Concepts of right and wrong are developed from early childhood on through preprofessional training. Nevertheless, students learn the application of the ethical principles of their profession from the precept and example of their teachers and practitioners of their profession with whom they come in contact during the formative years of training and early professional life.

One of the great modern philosophers [1] tells us that the early Greeks believed that there were two principles of conduct. One of these was represented by the laws of the state forbidding an individual to do certain things and ordering him to do others. Aside from these laws, they believed in what was considered to be an even more important principle of conduct. This involved the individual as an agent free to do as he chose. This important principle of conduct, however, had a master, or what might be roughly translated as a conscience, a sense of things that are not done, an understanding of the things a man feels inconsistent with his self-respect or his honor and consequently will not engage in, although there is no one to prevent him from doing so. Thus, aside from the learning of ethics through various educational mediums and personal contacts, there is also a question of character development guided by this second ancient principle of conduct. No more searching question can be asked about a people or about a man, nothing throws more light on character, than observing the role of this great second principle, or conscience, in regard to what it allows to be done and what it forbids. Education in all areas of human endeavor today can well afford to plan the inclusion of greater emphasis on moral and ethical values. It is no idle Ivory Tower fantasy to include emphasis on them in the curriculum.

1. Regan, L. J., and others: A Suggested Course in Legal Medicine for Medical Schools, J. A. M. A. **150**: 716 (Oct. 18) 1952.

1. Livingstone, Sir R. W.: Education and the Spirit of the Age, London, Oxford University Press, 1952.

ORGANIZATION SECTION

OHIO STATE MEDICAL ASSOCIATION

To permit readers of THE JOURNAL *to become better acquainted with the activities of state medical associations, articles describing them will appear from time to time in these pages.*—ED.

According to the medical archives of Ohio, on May 14, 1846, "a number of medical gentlemen," 25 in all, assembled at the Neil House in Columbus, adopted a constitution, and organized the Ohio State Medical Society, now the Ohio State Medical Association. In 1846, the situation in Ohio with respect to medicine was anything but bright and hopeful. The state was overrun with quacks, charlatans, and poorly prepared physicians. Attempts to control this situation during the previous decade had failed. Confronted with this crisis, the group of 25 physicians, holding degrees from recognized medical schools of the time, met to form an organization for fostering legislation to safeguard the public against knavery and ignorance and to initiate

The Hartman Theater Building in Columbus, in which the Ohio State Medical Association has its headquarters.

activities to elevate the standards of the profession in Ohio. Before 1846 there had been no real medical organization in Ohio. A legislative enactment in 1811 created five medical districts, with local boards of censors, to license physicians to practice. The law was repealed in 1812 and a substitute enacted, increasing the districts to seven and creating a meaningless state medical society. Amended many times, the act was finally repealed in 1833. It was not until 1868 that the state again took steps to regulate the healing arts by law. The law of 1868 was basically weak. In 1896, the state enacted an adequate examining and licensing law. That law carried many of the basic provisions found in the present Ohio Medical Practice Act. The society, officially chartered by the state in 1848, became on May 6, 1904, the Ohio State Medical Association, when it was incorporated as a nonprofit corporation under state law.

Much of the time of the society during its infancy was devoted to studying the needs of the state for facilities for institutional care. Frequently the members met in Columbus when the legislature was in session. Often they adjourned to the State House where leading physicians, including Daniel Drake and William Awl, would address the combined houses of the assembly on health and medical matters. Until 1902, the state society was composed of a mixture of county medical societies and district societies. That year the constitution was changed to conform with that of the American Medical Association, to read: "Component societies shall consist of those county medical societies which hold charters from this association." Thus ended the district society as a basis of local organization. However, later the word "district" returned to use as a basis for membership on the Council, the interim governing body of the Ohio State Medical Association.

The Ohio State Medical Journal, the first issue of which appeared in July, 1905, was published under the supervision of a publications committee until 1936, when the present editor, Dr. Jonathan Forman was appointed. Under Dr. Forman's guidance the journal has emphasized organization activities, published clinical papers of practical value, kept members informed of current legislative activities and economic-social developments affecting medicine, and devoted considerable attention to medical history. The position of news editor and managing editor for the journal was established in 1913. George V. Sheridan, who had served as a legislative representative of the association, was appointed and served under Dr. J. H. J. Upham, then chairman of the publications committee, who later became president of the state association and President of the A. M. A.

On Oct. 25, 1915, Mr. Sheridan was named to the newly created position of executive secretary, and a headquarters office was established in Columbus, where now the executive offices occupy the major part of the 10th floor of the Hartman Theater Building. Here are employed the executive secretary, Charles S. Nelson; George H. Saville, the assistant executive secretary, who also holds the position of director of public relations; an assistant director of public relations, who serves also as secretary of the rural health and the school health committees; an assistant managing editor and assistant business manager; a membership secretary; the editor of the journal (part time); and a stenographic and clerical staff of 10. In addition to the monthly journal, the association publishes a monthly newsletter known as *OSMAgram.* Through its department of public relations, the association provides speakers and exhibits for lay gatherings, distributes specially prepared literature to the public; furnishes articles and editorial suggestions to the press; cooperates with radio and television stations on medical and health programs; and supplies professional advice and guidance to official and voluntary agencies and organizations participating in medical and health activities. It maintains a bureau that supplies speakers for county and district society meetings and for meetings of civic groups and an active Physicians' Placement Service to assist areas needing physicians and to help physicians secure a location in Ohio. The committee on rural health, which administers a rural medical scholarship plan to interest rural young people in the practice of medicine, presents each year a lecture series on the general practice of medicine in small areas before the senior class at the Ohio State University College of Medicine in Columbus. The association's committee on school health has adopted policies with regard to physician participation in school health. It has published guides for school emergency service and cooperates in projects to intensify teamwork among physicians, educators, and health departments in the local community for better school health. In a "Guidepost to Services," distributed to all members, the association describes many personalized and special services for members in the field of workmen's compensation; medical care for veterans and for the aged; tax matters; legal opinions on medical and health subjects; matters relating to narcotics; reference material; data on physicians, hospitals, institutions, and welfare agencies; placement service; welfare programs; problems in ethics or professional relations, and the medical phases of suits for alleged malpractice.

The association has grown from its original membership of 25 to more than 8,000. Each of the 88 counties of the state has a chartered county medical society. The officers of the state medical association are: Dr. Merrill D. Prugh, Dayton, president; Dr. David W. Heusinkveld, Cincinnati, president-elect; Dr. Richard L. Meiling, Columbus, treasurer.

COUNCIL ON RURAL HEALTH

This is one of a series of brief statements explaining the work of various departments of the American Medical Association. —ED.

The Council on Rural Health was organized in 1945 when Mrs. Charles W. Sewell of the American Farm Bureau Federation interested Dr. F. S. Crockett in the problem of the shortage of physicians in rural areas. Dr. Crockett presented the problem to the American Medical Association and a committee was formed. It became a council in October, 1951. Though organized primarily to try to interest more physicians in rural practice, the larger purpose of the Council has come to be consideration of all problems of rural health in America. The Council furnishes guidance and materials to 45 state society rural health committees on ways and means for improving rural health. It sponsors an annual national conference on the subject, which serves both to inspire and educate the attending physicians and agricultural leaders. When it first decided to sponsor a national Conference on Rural Health, the Council members felt that they should contact leaders of farm organizations to determine what kind of program they wanted. Accordingly, an advisory committee was set up. On it were representatives of the Grange, the American Farm Bureau Federation, the Milk Producers Federation, and the Extension Services of the Land Grant Colleges. Its recommendations proved so valuable that the advisory committee became a permanent institution. It has continued to assist the A. M. A., not only with its succeeding conferences but with all aspects of its rural health programs. Today the committee is composed of 11 representatives from farm groups and the rural press.

The Council does not operate health programs. It believes in helping communities help themselves. It attempts, therefore, to activate communities, to provide them with information on how to achieve their aims, and to coordinate the activities of farm organizations and physicians so that they work together as a rural health improvement team.

Early in 1952 a field director was employed by the Council on a permanent basis to gain firsthand information on the soundness and effectiveness of its program, to point out what needs to be done in each state and suggest solutions to problems. The program for improving rural health promoted by the Council stresses: state and public health services, the Hill-Burton Hospital Construction Act, rural scholarships, agricultural school extension services, parent-teacher associations, voluntary health agencies, voluntary prepaid medical and hospital care plans, indigent medical care plans, state and county health councils, health education programs, and the encouragement of self-help programs. Through development of health councils and effective programs for improving rural health, the Council renders its most valuable service. The national conference has increased steadily in size and now is attended by about 600 representatives of the medical profession, voluntary health groups, farm organizations, state rural health committees, educators, and others.

CONFERENCE ON MENTAL HEALTH

The American Medical Association Committee on Mental Health will sponsor a meeting for mental health representatives of state medical associations at headquarters in Chicago, Sept. 17-18, to discuss methods of gaining a more effective integration of techniques of psychiatry with general medical practice and the mental health programs by which constituent medical associations can achieve this objective. It is planned that each of the state medical associations will be represented by an official of their present committee on mental health and at least one or more others of their leaders who are experienced in activities and policies of their respective organizations. The agenda for the meeting includes a welcoming address by Dr. Elmer Hess, Erie, Pa., President-Elect of the A. M. A., to be followed by a statement of purposes by Dr. Leo H. Bartemeier, Detroit, Chairman, A. M. A. Committee on Mental Health. Mental health programs of the state medical associations of Virginia, Texas, and Connecticut will be presented by their respective committee chairmen, Drs. David C. Wilson, Charlottesville, Va., Hamilton F. Ford, Galveston, Texas, and Clifford D. Moore, Stanford, Conn., each presentation being followed by open discussion by all the delegates. Dr. Winfred Overholser, superintendent of Saint Elizabeths Hospital, Washington, D. C., will be the guest speaker at a dinner meeting (courtesy of the Association) Friday evening at the Drake Hotel.

The program Saturday morning will include presentations by Dr. Walter E. Barton, Boston, chairman of the American Psychiatric Association's ad hoc committee for liaison with the American Medical Association; Dr. Marvin A. Block, Buffalo, chairman of the A. M. A. Subcommittee on Alcoholism; Mr. Sidney Spector, director, Inter-State Clearing House on Mental Health of the Council of State Governments; Mrs. George Turner, President of the Woman's Auxiliary to the A. M. A.; and Dr. David Price, assistant surgeon general of the U. S. P. H. S., representing the National Institute of Mental Health, Bethesda, Md.

NEW RADIO SERIES ON MEDICINE

Five more platters for radio broadcasting in the "Help Yourself to Health Series" are ready for shipment to local medical societies by the A. M. A. Bureau of Health Education. The five 15-minute shows complete the series of 13 that were produced by the Rocky Mountain Radio Council and based on presentations made at A. M. A. Rural Health Conferences. The five new recordings are entitled Rural Community Receives a New Doctor, A New Doctor in a Rural Community, Success of a Health Council Survey, How to Build a Hospital, and Nursing. At the same time, five other new recordings, completing the "Panorama of Medicine" series, also are ready for shipment to local medical societies by the A. M. A. Bureau of Health Education. These 15-minute panel discussion programs, organized by Marshall-Heseter Productions, New York, originally were broadcast from station KCBS in San Francisco during the A. M. A. session in June.

QUARTERLY CUMULATIVE INDEX MEDICUS

Volume 52 of the Quarterly Cumulative Index Medicus, covering literature for the second half of 1952, has been mailed to subscribers and is now available for purchase from the Order Department of the American Medical Association. Volume 45 (January-June, 1949), which has been held as a backlog for several years, is now being reproduced, and this issue is scheduled to appear next. Editing of cards for volume 53 (January-June, 1953) will begin about the first of October.

INVITATION TO ANNUAL CONFERENCE IN JAMAICA

The Jamaica branch of the British Medical Association has extended a cordial invitation to members of the American Medical Association to attend its annual conference to be held in Kingston, Dec. 3-4, immediately after the Clinical Meeting of the A. M. A. in Miami, Fla., Nov. 29-Dec. 2. The Jamaica branch has been in existence since 1877 and represents more than 300 doctors in that country. A special session for Saturday morning would be arranged at which the Jamaica branch would be pleased to have two, three, or four members of the A. M. A. speak on subjects to be arranged. A reception and dance would be held in the evening at which the guests would be received by the Governor of Jamaica. Kingston is within three hours by air from Miami.

MEDICAL NEWS

CALIFORNIA

Director Needed for Cardiorespiratory Laboratory.—The San Diego Heart Association will sponsor a director of the cardiorespiratory laboratory at the new Sharp Memorial Hospital. Immediate applications will be considered. The laboratory, which will include facilities for electrocardiography, angiocardiography, fluoroscopy, cardiac catheterization, and pulmonary function studies and will carry on all the cardiopulmonary diagnostic work for the hospital, will be completely equipped at an outlay of about $45,000. The salary of the director is open, as is the duration of the contract. Possibilities are now being explored for affiliation with a medical school. Interested physicians should write to the Heart Center Committee, San Diego Heart Association, 1651 Fourth Ave., San Diego 1.

COLORADO

State Medical Meeting.—The Colorado State Medical Society will hold its 84th annual session at the Broadmoor Hotel, Colorado Springs, Sept. 21 to 24, under the presidency of Dr. Claude D. Bonham, Denver. Presentations by out-of-state speakers include:

Recognition and Management of Chronic and Relaxing Pancreatitis. Surgical Management of Cholelithiasis and Its Sequelae, Kenneth W. Warren, Boston.

Difficulty in Swallowing. Constipation and Its Management, Franz J. Ingelfinger, Boston.

Endocrinology in Children. Jaundice in the Newborn, Barton Childs, Baltimore.

Experiences with a Vitallium Intramedullary Artificial Hip. Common Difficult Fractures, Frederick R. Thompson, New York.

Visceral Pain Mechanism. Evaluation of Treatment in Disease, Stewart G. Wolf, Oklahoma City.

Thrombophlebitis. Relation of Smoking to Lung Carcinogenesis, Alton Ochsner, New Orleans.

Thursday at 8:45 a. m. a motion picture, "The Etiology of Pollenosis," by Dr. D. Eugene Cowen, Denver, will be shown. The Thursday afternoon program will begin at 1:30 instead of 2 p. m., as previously announced, to permit viewing of the television symposium on hypertension (3 to 4 p. m.), which will be transmitted through a national closed circuit over the Columbia Broadcasting System by the American College of Physicians (THE JOURNAL, Aug. 28, page 1591). Because of the state medical meeting, Colorado Springs will be used as the receiving station, although original plans were to send the telecast to Denver. The annual banquet Thursday at 7:30 p. m. will be addressed by Dr. W. W. Bauer, Chicago, Director, A. M. A. Bureau of Health Education, whose topic will be "Patients Are Particular People." At 9:30 p. m. there will be dancing in the Hawaiian Village. The woman's auxiliary will meet simultaneously with the state association. Its Friday morning session will be addressed by Dr. Henry C. Grabow, Canon City, whose topic will be "Where Do You Fit?"

DISTRICT OF COLUMBIA

Medical Election.—Newly elected officers of the Medical Society of the District of Columbia include: Dr. William Ross Morris, president-elect; Dr. Paul A. Wilner, first vice-president; and Dr. Margaret M. Nicholson, second vice-president. Dr. Preston A. McLendon serves as president.

Smithsonian Exhibit of Electrocardiography.—During the World Congress of Cardiology in Washington, D. C., Sept. 12 to 18, the Smithsonian Institution will inaugurate a permanent exhibit on the evolution of the electrocardiograph. The exhibit, containing an electrocardiograph enclosed in plexiglass instead of metal so that all controls and components can be viewed from any angle with the aid of a mirror back-drop, shows diagrammatically how an electrocardiograph is used on a patient.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

FLORIDA

Society News.—At a recent meeting of the Miami Pediatric Society, Dr. Meyer B. Marks, Miami Beach, was elected president and Dr. Martiele Turner, Coral Gables, secretary-treasurer. The society gave a testimonial dinner on June 11 to Dr. William Watson McKibben, 80 years old, who has been in continuous pediatric practice in Dade County since 1923.

Obstetric Seminar.—The Tri-State Obstetric Seminar will be held Sept. 13 to 15 at the Sheraton Beach Hotel, Daytona Beach, under the sponsorship of the maternal and child health divisions of Florida, Georgia, and South Carolina and the Florida Medical Association. The speakers will include the following physicians: R. Gordon Douglas, New York; F. Bayard Carter, Durham, N. C.; Willis E. Brown, Little Rock, Ark.; James G. Hughes, Memphis, Tenn.; Milton L. McCall, New Orleans; William Mingert, Dallas, Texas; and Allan C. Barnes, Cleveland. This seminar has been approved for credit hours by the American Academy of General Practice. There will be no tuition fee.

ILLINOIS

Clinics for Crippled Children.—The University of Illinois division of services for crippled children will conduct the following clinics in cooperation with local medical and health organizations:

Sept. 14, East St. Louis, St. Mary's Hospital; Peoria, St. Francis Hospital.

Sept. 15, Evergreen Park, Little Company of Mary Hospital; Jacksonville, Our Saviour's Hospital.

Sept. 16, Anna City Hospital; Rosiclare, Y.M.C.A. Building.

Sept. 17, Evanston, St. Francis Hospital.

Sept. 21, Centralia, Recreation Center.

Sept. 22, Aurora, Copley Memorial Hospital; Springfield (cerebral palsy), Memorial Hospital.

Sept. 23, Bloomington, St. Joseph's Hospital; Chester, Lutheran School; Rockford, St. Anthony Hospital.

Sept. 24, Chicago Heights (rheumatic fever), St. James Hospital.

Sept. 28, Effingham (rheumatic fever), St. Anthony's Emergency Hospital; Peoria, St. Francis Hospital.

Chicago

Free Public Lectures.—The Museum of Science and Industry, 57th St. and Lake Michigan, announces the following free lectures Sundays, 3 p. m.:

Sept. 12, A Problem of Thirty Million Americans: Hay Fever and Other Allergies, Max Samter, Chicago.

Sept. 19, Living with Your Ulcers, Armand Littman, Chicago.

Sept. 26, What You Should Know About Arthritis, Irving E. Steck, Chicago.

Oct. 3, Dejected, Depressed, or Delightfully Drunk, Jules H. Masserman, Chicago.

Oct. 10, How Old Is Your Infant at Birth, Arthur H. Parmelee Sr., Los Angeles.

KENTUCKY

Dr. Stovall Honored.—J. Watts Stovall, Grayson, president of the Kentucky State Medical Association, will be honored on a "This Is Your Life" type of program at the annual Friends of School Day Picnic at Carter Caves State Park, sponsored by the Carter County Teachers' Association, Sept. 17. Dr. Stovall, who has practiced for almost 50 years, has been a member of the Grayson Board of Education for 12 years.

Society News.—The Association of Ex-Residents, Fellows, and Interns of the Louisville General Hospital and the University of Louisville School of Medicine was organized at a dinner meeting in June. Dr. DeLou P. Hall, Louisville, was elected the first president. The object of the association is to promote the interest of the Louisville General Hospital and the welfare of those who receive professional training in it, to develop an *esprit de corps* in the house staff, and to sustain an interest in the hospital for those who have completed their training.

MINNESOTA

Southern Minnesota Medical Meeting.—The annual meeting of the Southern Minnesota Medical Association will be held at Winona, Sept. 13. The program for the morning session includes:

Carcinoma of the Common Duct: Report of Two Cases, William O. Finkelnburg, Winona.
Indications and Contraindications for Tonsillectomy, Jennings D. Sjoding, Mankato.
Massive Gastric Hemorrhage with Cause Unknown Preoperatively, Charles E. Rea, St. Paul.
Fundamental Considerations in Diagnosis and Treatment of Tumors of Colon and Rectum, Walter A. Fansler and William T. Smith, Minneapolis.
Psychoses Associated with the Postpartum Period, Ernest M. Hammes Jr., St. Paul.
Current Status of Radioisotopes in Diagnosis and Treatment of Blood Dyscrasias, Charles F. Stroebel, Rochester.
Precautions in the Use of Cortisone, L. Emmerson Ward, Rochester.
Hearing Loss in Children: Detection, Treatment, and Rehabilitation, Kinsey M. Simonton, Rochester.

The following papers have been scheduled for the afternoon session:

Cardiac Surgery, to be announced.
Tumors of the Brain and Spinal Cord, Hendrik J. Svien, Rochester.
Nursing Education Problem in Minnesota, Thelma Dodd, R.N., St. Paul.
Teratoma of the Pelvic Colon Presenting in the Lumen, Case Report, Stanley T. Kucera, Northfield.
Pulmonary Hypertension Due to Thromboembolic Pulmonary Arterial Disease Following Pregnancy, Case Report, Ben Sommers, St. Paul.
Meconium Peritonitis, Case Report, George R. McNear, Mankato.
Giant Condyloma (Verruca) Simulating Carcinoma of the Penis, Case Report, Isadore I. Fisher, Minneapolis.
Lipoid Pneumonia: Differential Diagnosis of Lung Shadows, J. Gordon Beaton, Northfield.

MISSOURI

University News.—Dr. Iain D. Ferguson, Rutherglen, Scotland, who has been teaching at the Institute of Physiology, University of Glasgow, has been named assistant professor of physiology at the St. Louis University School of Medicine.

Urology Meetings in Kansas City.—A series of meetings on urologic subjects has been announced for the 1954-1955 season by Dr. Clarence S. Capell, secretary, Kansas City Urological Society. Each meeting, to be held at the Pine Room, Fred Harvey Restaurant, Kansas City Union Station, will consist of a social hour at 6 p. m. followed by dinner, a scientific paper, and the presentation of urograms. The following programs will be given:

Sept. 15, Clinical Significance of Renal Efficiency, William M. Valk, Kansas City, Kan., and Robert H. Owens, Kansas City.
Oct. 7, Uretero-Enterostomy, Justin J. Cordonnier, St. Louis, and Arthur L. Stockwell, Kansas City.
Nov. 17, Tumor of the Bladder, Arnold G. Isaac, Newton, Kan., and Pratt Irby, Fort Scott, Kan.
Jan. 19, 1955, The Female Urethra, R. L. Hoffman and William W. Leifer, Kansas City.
Feb. 16, Untoward Reactions from Urogram Injections, Joseph G. Siceluff, Springfield, and Berneil W. Andrews, Kansas City.
March 16, Urinary Calculi, Hjalmar E. Carlson and Jacob Zellermayer, Kansas City.
April 24, Urogenital Anomalies, Oscar W. Davidson, Kansas City, Kan., and Robert B. Bristow, St. Joseph.

The last hour of each session will be devoted to the presentation and interpretation of urograms. All urologists in the area are invited to attend and to take films.

MONTANA

State Medical Meeting at Butte.—The 76th annual meeting of the Montana Medical Association will be held at the Finlen Hotel, Butte, Sept. 16 to 19, under the presidency of Dr. Sidney C. Pratt, Miles City. Guest speakers and their first presentations include:

Advances in Cancer Research, Brewster S. Miller, New York.
Toxemias of Pregnancy, John H. Randall, Iowa City.
Traumatic Joints, Carrol B. Larson, Iowa City.
Carcinoma of the Prostate—Use of Radioactive Gold, Rubin H. Flocks, Iowa City.
Treatment of Leukemia and Related Diseases, Willis M. Fowler, Iowa City.
Nutrition of the Surgical Patient Before and After Surgery, Robert T. Tidrick, Iowa City.
Gout and Its Therapy, Charley J. Smyth, Denver.

The scientific sessions will be concluded Friday with a clinical pathological conference, 4:10 p. m., moderated by Dr. John A. Newman, Butte, with Drs. Deane C. Epler, Bozeman, George T. R. Fahlund, Great Falls, and Elizabeth Grimm, Billings, as collaborators. A reception at 7 p. m. will precede the annual banquet, at which Dr. Morris A. Gold, Butte, will serve as toastmaster. Palmer Hoyt, editor and publisher of the *Denver Post*, will present "The Doctors' Part in the International Crisis." The Silver Bow County Medical Society, under the presidency of Dr. Robert G. Kroeze, Butte, will be host to all members and guests of the association at a friendship hour Friday, 7:30 to 9 p. m. Dr. Pratt will extend greetings at a luncheon of the woman's auxiliary, which will meet concurrently, and Dr. Park W. Willis Jr., Hamilton, chairman of the public relations committee of the Montana Medical Association, will deliver an address. Dr. Flocks will address the dinner meeting of the Montana Urological Society, Wednesday, 6:30 p. m., and Dr. Tidrick will discuss pediatric surgery at the dinner of the Montana Pediatric Society, Wednesday, 8 p. m.

OHIO

Postgraduate Radio Program.—Two contributions by Dr. Charles A. Doan, dean, Ohio State University College of Medicine, Columbus, will be included in the forthcoming postgraduate radio program series, "For Doctors Only." "White Blood Cells in Health and Disease" will be broadcast Sept. 16, and "The Action of Drugs and Toxic Agents on the Blood Picture" will be heard Oct. 7, both from station WNYC.

Personal.—Dr. Jacob L. Bubis, formerly chief of obstetrics and gynecology of Mount Sinai Hospital in Cleveland, has retired from the practice of medicine at the age of 69, after 46 years of service.——Dr. Richard D. Bryant, associate professor of obstetrics at his alma mater, the University of Cincinnati College of Medicine, recently presented a paper entitled "Toxemia of Pregnancy" before the International Congress on Obstetrics and Gynecology at Geneva, Switzerland.

Refresher Course in Aviation Medicine.—A postgraduate refresher course in aviation medicine will be offered at the Ohio State University Health Center, Columbus, Sept. 13 to 18, under the joint sponsorship of the college of medicine and the Civil Aeronautics Administration. This course, for private physicians, medical directors of airlines, and aeronautical industries, is designed to give information on medical problems peculiar to aviation and particularly civil aviation. Topics to be covered will include aviation toxicology, cabin pressurization, effect of deceleration, cardiovascular diagnosis and problems, visual problems, psychiatry, endocrine and metabolic disorders, and recent innovations in aviation and space medicine. The faculty will include specialists from the C.A.A., Western Reserve Medical School, the University of Pennsylvania, and Ohio State University. Applications have been received from physicians as far distant as Alaska and Mexico.

WEST VIRGINIA

Meeting on Tuberculosis.—The 34th annual meeting of the West Virginia Tuberculosis and Health Association will be held at the Frederick Hotel in Huntington, Sept. 16 and 17. Thursday afternoon the West Virginia Trudeau Society will sponsor the following program:

Emotional Aspects of the Tuberculous, Claire M. Vernier, Ph.D., Martinsburg.
Modern Treatment of Tuberculosis, Ross L. McLean, Baltimore.
Surgery in the Treatment of Tuberculosis, M. Lawrence White Jr., Huntington.

Dr. Howard R. Crews, Huntington, will serve as moderator for an x-ray symposium in which case reports of tuberculosis and chest diseases will be presented and discussed. Physicians are requested to bring films, with confirmed diagnosis, for discussion and review.

Speakers Friday morning will include Quin F. Curtis, Ph.D., head, department of psychology, West Virginia University, Morgantown; Dr. Helen B. Fraser, director of the department of disease control, state department of health, Charleston; and Robert J. Weymueller, executive secretary, National Conference of Tuberculosis Workers, New York. Dr. A. B. Price, regional medical director, region 3, Department of Health, Education, and Welfare, Washington, D. C., speaker at the annual dinner Thursday evening, will present "Views of Public Health Today." Both medical and general sessions will be open to the public.

GENERAL

American Association of Blood Banks.—The American Association of Blood Banks will hold its annual meeting at the Shoreham Hotel, Washington, D. C., Sept. 13 to 15. A technician refresher course Sunday, 3 to 5 p. m., will be followed by a buffet supper provided by the Metropolitan Washington Blood Bank Association. The address of welcome will be delivered Monday morning by Dr. Preston A. McLendon, Washington, D. C., president, Medical Society of the District of Columbia. At 10:40 a. m. there will be a panel on hemolytic transfusion reactions, followed by discussion of individual papers. Luncheon discussion groups on hemolytic transfusion reactions, the hepatitis problem, afibrinogenemia and related problems, and typing and cross-matching techniques will meet daily from 12:30 to 2:30 p. m., and motion pictures will be shown from 2 to 5 p. m. On Wednesday, 1 to 3 p. m., a luncheon panel on public relations is scheduled. The Hon. Val Peterson, former three-term governor of Nebraska and federal civil defense administrator since March 4, 1953, will be the principal speaker at the banquet. As F.C.D.A. administrator, Mr. Peterson is also national coordinator of natural peacetime disaster relief efforts. His subject for the banquet will be "Blood Banking and the Civil Defense Program." Dr. Aaron Kellner, New York, is president of the association.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States and its territories and possessions in the weeks ended as indicated:

Area	Aug. 14, 1954		Aug. 15, 1953, Total
	Paralytic Type	Total Cases Reported	
New England States			
Maine	2	6	23
New Hampshire	..	7	5
Vermont	2	2	5
Massachusetts	10	39	22
Rhode Island	..	1	10
Connecticut	6	17	15
Middle Atlantic States			
New York	25	87	169
New Jersey	22	39	47
Pennsylvania	..	57	63
East North Central States			
Ohio	29	108	166
Indiana	20	49	40
Illinois	47	96	161
Michigan	56	118	148
Wisconsin	11	37	41
West North Central States			
Minnesota	25	52	172
Iowa	19	78	49
Missouri	24	49	54
North Dakota	1	6	14
South Dakota	..	4	6
Nebraska	11	23	13
Kansas	4	45	32
South Atlantic States			
Delaware	3	4	2
Maryland	7	8	26
District of Columbia	2	4	5
Virginia	20	39	52
West Virginia	11	22	38
North Carolina	22	69	55
South Carolina	7	22	8
Georgia	22	57	13
Florida	20	63	34
East South Central States			
Kentucky	19	33	21
Tennessee	5	43	38
Alabama	11	17	19
Mississippi	6	40	21
West South Central States			
Arkansas	6	16	19
Louisiana	7	18	11
Oklahoma	6	37	40
Texas	61	159	70
Mountain States			
Montana	2	4	10
Idaho	..	3	3
Wyoming	5	24	1
Colorado	9	26	8
New Mexico	4	12	4
Arizona	3	15	43
Utah	..	2	5
Nevada	..	13	..
Pacific States			
Washington	10	26	13
Oregon	4	12	10
California	110	197	170
Territories and Possessions			
Alaska	10	24	2
Hawaii	4	5	1
Puerto Rico	..	..	..
Total	710	1,934	1,997

Meeting of Military Ophthalmologists and Otolaryngologists.—The Society of Military Ophthalmologists and the Society of Military Otolaryngologists will hold a joint dinner meeting at the time of the International Congress of Ophthalmology and the annual meeting of the American Academy of Ophthalmology and Otolaryngology in New York in September. Dr. Frederick C. Cordes, professor of ophthalmology, University of California School of Medicine, San Francisco, will be awarded the plaque of honorary membership to the Society of Military Ophthalmologists at this meeting. Cocktails and dinner will be served at 6 p. m., Sept. 21, Shelton Hotel, Lexington Ave. and 49th St. All members, ophthalmologists, and otolaryngologists on active duty with the armed forces are invited to attend. Application should be made to Col. John H. King Jr., secretary-treasurer, Society of Military Ophthalmologists, Eye Clinic, Walter Reed Army Hospital, Washington 12, D. C.

Fellowships in Radiation Therapy.—American Cancer Society clinical fellowships in radiation therapy are offered in 1955-1956 to qualified graduates in medicine who have already had thorough basic training in the principles and practice of radiation therapy and who desire to have additional training at certain clinics in the United Kingdom, the Scandinavian countries, and France. Fellowships are available to citizens of the United States who are graduates of recognized medical schools in the United States and are under 40 years of age. In the selection of applicants, priority will be given to physicians (1) who are already certified by the American Board of Radiology, (2) who have completed the required training in preparation for board examinations but have not yet taken the examinations, and (3) who, while intending to complete board requirements and take the examinations, are still in the training period. The annual stipend for fellows in radiation therapy is $4,500, including travel. The fellowship period shall be one year, although renewal for one year or less will be considered. Fellowships may commence at any time mutually agreeable to the institution and the fellow. Applications for fellowships for the year 1955-1956 must be submitted before Oct. 1, 1954.

James Picker Awards.—The James Picker Foundation announces the award of nine grants and two fellowships in radiological research for the coming year. Grants were made to the following investigators in the United States:

Dr. Henry Doubilet, New York University College of Medicine, for continued work on the x-ray visualization of the biliary and pancreatic ducts.

Dr. Jack Friedman, Mount Sinai Hospital, Minneapolis, for studies on the effect of emotion on the mucosal pattern of the small bowel.

Dr. Jack W. Grossman and Dr. J. L. Howarth, Lovelace Foundation, for Medical Education and Research, Albuquerque, N. M., for development of techniques for dose estimation, using a cobalt 60 unit.

Dr. George Jacobson and Dr. Donald C. Balfour Jr., University of Southern California School of Medicine, Los Angeles, for an investigation of the use of pharmacological agents in the radiological diagnosis of gastrointestinal disease.

Dr. Gardner Middlebrook, National Jewish Hospital, Denver, for continued pulmonary angiographic preresection and postresection studies in tuberculosis and simulating diseases.

Dr. Henry Plenk, University of Utah College of Medicine, for continued studies on the influence of drugs on radiation reaction.

Dr. William J. Tobin, Georgetown University School of Medicine, Washington, D. C., for continued study of bone architecture.

Fellowships were awarded for the coming year to Dr. Murray G. Smyth Jr., for studies on the distribution and dosage of colloidal and particulate sources of radioactivity, under the guidance of Dr. Richard H. Chamberlain at the University of Pennsylvania School of Medicine, Philadelphia, and to Dr. Kakarla Subbarao, for an investigation of regional ileus as a roentgenological manifestation of disease, under the guidance of Dr. Maxwell H. Poppel at the Bellevue Hospital, New York.

American Hospital Association.—The annual convention of the American Hospital Association will be held in Chicago, Sept. 13 to 16. At the general session Monday, 2:15 p. m., at Navy Pier, the Hon. Lister Hill, senator from Alabama, will discuss "Meeting Public Needs," after which Dr. Alan Gregg, New York, vice-president of the Rockefeller Foundation, will consider "Individual Responsibility—The Keystone of the Voluntary Way." From 7 to 12 p. m. a "get-acquainted" evening has been sched-

uled at the Aragon ballroom. Tickets ($5) may be purchased at the registration center of the Palmer House Saturday and Sunday and at Navy Pier on Monday.

Dr. Martha A. O'Malley, director, division of hospital and institutional services, Indiana State Board of Health, Indianapolis, will open the session on administrator-trustee-medical-staff relationships in small hospitals, Tuesday, 9:30 a. m., with "Responsibility of the Board of Trustees," after which Dr. Wayne C. Rydburg, Swedish Hospital, Minneapolis, will discuss "Medical Staff Organization and Relationships" and L. C. Mortrud, Ingalls Memorial Hospital, Harvey, Ill., will present data on the administrator. Dr. Edward L. Turner, Secretary, A.M.A. Council on Medical Education and Hospitals, Chicago, will serve on the panel of commentators for the concurrent session on hospital planning to meet changing needs. Dr. Frank R. Bradley, St. Louis, president-elect, American Hospital Association, will preside at the general session Tuesday, 2:15 p. m., when "Public Opinion—A Challenge to Hospitals" will be the topic. Dr. Edmund J. Morrissey, San Francisco, former president, San Francisco Medical Society, will discuss "The Physician's Role in Hospital Care."

A problem clinic for small hospitals will be conducted Wednesday morning. Concurrently there will be a panel discussion, "Improving Our Face-to-Face Relationships," by Dr. Norman S. Moore, Ithaca, N. Y.; Verne Kallejian, Ph.D., director of education, American Hospital Association, Chicago; and members of the staff of Englewood Hospital, Chicago. "Hospital Accreditation—What It Means" will be the topic for the general session Wednesday afternoon. Dr. Newell W. Philpott, Montreal, Canada, chairman, board of commissioners, Joint Commission on Accreditation of Hospitals, will open the session with "Hospital Accreditation—A Public Service," after which Dr. Kenneth B. Babcock, Chicago, director of the joint commission, will discuss "The Future of Hospital Accreditation." Dr. Julian P. Price, Florence, S. C., Trustee, American Medical Association, will have as his topic "Proper Medical Staff Organization"; Dr. Jack Masur, assistant surgeon general, chief, Bureau of Medical Services, Public Health Service, Washington, D. C., will talk on good medical records; and Dr. LeRoy H. Sloan, vice-chairman of the board of commissioners, joint commission, will discuss other hospital services.

"A Hospital Is Ready for Accreditation—Or Is It?" will be the question considered Thursday morning by a panel including Dr. Masur, chairman, and Drs. Anthony J. J. Rourke, New Rochelle, N. Y.; Edward H. Leveroos, Director, Division of Hospitals and Graduate Education, A.M.A. Council on Medical Education and Hospitals; Robert S. Myers, Fernald C. Fitts, Jose L. Gonzalez, and Kenneth B. Babcock, Chicago; and Julian P. Price, Florence, S. C. Thursday afternoon Dr. Howard A. Rusk, New York, will talk on needs and distribution of care for the chronically ill, and Dr. Harry F. Becker, Battle Creek, field secretary, Michigan State Medical Society, will discuss "Controlling the Cost, the Use and Misuse of High Quality Hospital Care." The annual banquet will be held Thursday, 7 p. m., in the grand ballroom of the Palmer House. The new president, Dr. Frank R. Bradley, director, Barnes Hospital, St. Louis, will be inducted.

LATIN AMERICA

International Congress of Surgeons.—The ninth international congress of the International College of Surgeons, recently held in São Paulo, Brazil, was attended by 27 delegations from different countries before whom 339 scientific papers were presented. The opening session, at which the governor of the state of São Paulo presided, was addressed by Dr. Max Thorek, founder of the International College of Surgeons; Dr. Carlos Gama, chairman of the committee of arrangements; and Dr. Oscar Cintra Gordinho, president of the Brazilian section of the International College of Surgeons. Owing to the absence of the retiring president, Prof. Hans Finsterer of Vienna, because of illness, Dr. Francisco Grana of Peru, former president of the International College of Surgeons, presided over the meeting of the house of delegates. Vienna was chosen as the site for the 10th congress, to be held in 1956. The following new sections were approved: obstetrics and gynecology, neurosurgery, plastic surgery, ophthalmology and otolaryngology, and orthopedics. At the dinner, congressman Camillo Aschar spoke in the name of the Brazilian section; Dr. Max Thorek, Chicago, in the name of the college; and Dr. Edward J. McCormick, then President of the American Medical Association, in that of the international section. The central theme of the congress, "Experience with Socialized Medicine Throughout the World," was discussed by Dr. McCormick, whose topic was "The Malignancy of Socialized Medicine"; Dr. Maurice Dorbes, Morocco, who explained how the French government organized the medical services in Morocco; Roelf Ruding, Holland, who spoke of "The Rights and Principles of Freedom in Medicine"; Dr. David B. Allman, Atlantic City, N. J., Trustee of the A. M. A., who presented "Delusion of Socialized Medicine"; Dr. Morris Fishbein, Chicago, who emphasized the unanimity of opinion against socialized medicine; Pierre Lachapelle, Bordeaux, who told how the French government adopted an intermediate solution conciliating the opposing aspects of the problem; and Cesarino Junior, Brazil, who related the situation in that country, where socialized medicine is, to some extent, adopted, there being 5,172 government-sponsored medical institutions with a staff of 20,905 physicians, constituting 40% of the medical activities in the country. Other themes of the congress were "Antibiotics and Their Application in the Medical Specialties" and "Contrast Media in Radiology." Surgery among the Incas was discussed by Dr. Francisco Grana, and the medical practices among the Navajo Indians were discussed by Dr. Suren H. Babington, Berkeley, Calif. Dr. Desmond Mulvany, London, England, spoke about "An Investigation into the Radioactive Content of the Human Body and Its Significance as a Factor in the Etiology of Cancer"; Dr. Raul Montera, Argentina, about "Radioactive Isotopes in Neurosurgery"; and Dr. Moses Beherend, Philadelphia, about "Evolution of Gastrointestinal Surgery." Cancer was discussed by Dr. August F. Daro, Chicago; Dr. Julio Baistrocchi, Argentina; and Drs. Fernando Gentil and Arrigo Raia, Brazil.

FOREIGN

Medical Meetings of France.—The medical societies of general medicine in France and abroad are invited to participate in the second session of the Journées Médicales de France et de l'Union Française in June, 1955, at Strasburg. Each participating society is allowed one communication or report on a subject chosen by it, the name of the reporter and the subject to be sent to the secretariat not later than Oct. 15. The general subject of all reports and communications is "New Ideas in Therapeutics."A typewritten summary of the report in triplicate must reach the permanent directing committee before Jan. 31, 1955, and must not exceed six pages of 45 lines each. Information may be obtained from the Secretary General, Dr. L. Michelet, 12, rue Pierre-Geofroix, Colombes (Seine), France.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1954 Clinical Meeting, Miami Florida, Nov. 29-Dec. 2.

1955 Annual Meeting, Atlantic City, N. J., June 6-10.

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

1956 Annual Meeting, Chicago, June 11-15.

1956 Clinical Meeting, Seattle, Nov. 27-30.

ACADEMY OF PSYCHOSOMATIC MEDICINE, New York, Oct. 8-9. Dr. Ethan Allan Brown, 75 Bay State Road, Boston 15, Secretary.

AMERICAN ACADEMY FOR CEREBRAL PALSY, Williamsburg Inn, Williamsburg, Va., Nov. 4-6. Dr. Harry E. Barnett, 116 South Michigan Blvd., Chicago 3, Secretary.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY, The Waldorf-Astoria, New York, Sept. 19-24. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Executive Secretary.

AMERICAN ACADEMY OF PEDIATRICS, Palmer House, Chicago, Oct. 4-7. Dr. E. H. Christopherson, 610 Church St., Evanston, Ill., Secretary.

AMERICAN ASSOCIATION OF BLOOD BANKS, The Shoreham, Washington, D. C., Sept. 13-16. Miss Marjorie Saunders, 3500 Gaston Ave., Dallas 4, Texas, Secretary.

AMERICAN ASSOCIATION OF MEDICAL RECORD LIBRARIANS, Sheraton-Cadillac Hotel, Detroit, Oct. 4-8. Miss Doris Gleason, 510 N. Dearborn St., Chicago 10, Executive Director.

AMERICAN CANCER SOCIETY, Hotel Roosevelt, New York, Oct. 17-24. Dr. Charles S. Cameron, 47 Beaver St., New York 4, Medical Director.

AMERICAN CLINICAL AND CLIMATOLOGICAL ASSOCIATION, Lake Placid Club, Lake Placid, N. Y., Oct. 14-16. Dr. Marshall N. Fulton, 124 Waterman St., Providence 6, R. I., Secretary.

AMERICAN COLLEGE OF GASTROENTEROLOGY, The Shoreham, Washington, D. C., Oct. 25-30. Dr. A. Xerxes Rossien, 33 West 60th St., New York 23, Secretary.

AMERICAN FRACTURE ASSOCIATION, Shamrock Hotel, Houston, Texas, Oct. 11-14. Dr. H. W. Wellmerling, 626 Griesheim Bldg., Bloomington, Ill., Secretary-General.

AMERICAN HEART ASSOCIATION, Jung Hotel, New Orleans, Oct. 26-30. Mr. Irving Hexter, 44 East 23rd St., New York 10, Secretary.

AMERICAN HOSPITAL ASSOCIATION, Palmer House, Chicago, Sept. 13-16. Dr. E. L. Crosby, 18 East Division St., Chicago 10, Director.

AMERICAN MEDICAL WRITERS' ASSOCIATION, Hotel Sherman, Chicago, Sept. 24. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

AMERICAN OTORHINOLOGIC SOCIETY FOR PLASTIC SURGERY, The Waldorf-Astoria, New York, Sept. 19. Dr. Louis J. Feit, 66 Park Ave., New York, Secretary.

AMERICAN PUBLIC HEALTH ASSOCIATION, Memorial Auditorium, Buffalo, N. Y., Oct. 11-15. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

AMERICAN ROENTGEN RAY SOCIETY, Shoreham Hotel, Washington, D. C., Sept. 21-24. Dr. Bartow R. Young, Germantown Hospital, Philadelphia 44, Secretary.

AMERICAN SOCIETY OF ANESTHESIOLOGISTS, Netherland-Plaza Hotel, Cincinnati, Oct. 25-30. Dr. J. Earl Remlinger Jr., 188 West Randolph St., Chicago 1, Secretary.

AMERICAN SOCIETY FOR THE STUDY OF ARTERIOSCLEROSIS, Sheraton Hotel, Chicago, Oct. 31-Nov. 1. Dr. O. J. Pollak, P. O. Box 228, Dover, Del., Secretary.

AMERICAN SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Hotel Peabody, Memphis, Tenn., Nov. 4-6. Dr. John E. Larsh Jr., Dept. of Parasitology, School of Public Health, Univ. of North Carolina, Chapel Hill, N. C., Secretary.

AMERICAN THERAPEUTIC SOCIETY, The Chase Hotel, St. Louis, Nov. 4-7. Dr. Oscar B. Hunter, 915 Nineteenth St. N. W., Washington, D. C., Secretary.

ASSOCIATION OF LIFE INSURANCE MEDICAL DIRECTORS OF AMERICA, Royal York Hotel, Toronto, Canada, Oct. 12-14. Dr. Henry B. Kirkland, P. O. Box 594, Newark, N. J., Secretary.

ASSOCIATION OF AMERICAN MEDICAL COLLEGES, French Lick Springs Hotel, French Lick, Ind., Oct. 17-20. Dr. Dean F. Smiley, 185 N. Wabash Ave., Chicago 1, Secretary.

CALIFORNIA ACADEMY OF GENERAL PRACTICE, Statler Hotel, Los Angeles, Oct. 24-27. Mr. Wm. W. Rogers, 450 Mission St., San Francisco, Executive Secretary.

CENTRAL ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS, Hotel Jefferson, St. Louis, Oct. 7-9. Dr. Harold L. Gainey, Suite 602, 116 S. Michigan Ave., Chicago 3, Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH, Drake Hotel, Chicago, Oct. 29-30. Dr. Robert H. Ebert, 950 East 59th St., Chicago 37, Secretary.

CLINICAL ORTHOPAEDIC SOCIETY, Sheraton Hotel, Chicago, Oct. 7-9. Dr. John H. Moe, 825 Nicollet Ave., Minneapolis, Secretary.

COLORADO STATE MEDICAL SOCIETY, Broadmoor Hotel, Colorado Springs, Sept. 21-24. Mr. Harvey T. Sethman, 835 Republic Building, Denver 2, Executive Secretary.

CONGRESS OF NEUROLOGICAL SURGEONS, The Waldorf-Astoria, New York, Nov. 4-6. Dr. Bland W. Cannon, 1092 Madison Ave., Memphis, Tenn., Secretary.

DELAWARE, MEDICAL SOCIETY OF, DOVER, Oct. 11-13. Dr. Norman L. Cannon, 1208 Delaware Ave., Wilmington, Executive Secretary.

DISTRICT OF COLUMBIA, MEDICAL SOCIETY OF THE, Hotel Shoreham, Washington, D. C., Nov. 1-3. Mr. Theodore Wiprud, 1718 M St. N. W., Washington, D. C., Secretary.

GULF COAST CLINICAL SOCIETY, Edgewater Park, Miss., Oct. 21-22. Dr. F. C. Minkler, Pascagoula, Miss., Secretary.

INDIANA STATE MEDICAL ASSOCIATION, Murat Temple, Indianapolis, Oct. 26-28. Mr. James A. Waggener, 23 East Ohio St., Indianapolis 4, Executive Secretary.

INDUSTRIAL HEALTH CONFERENCE (Houston), Shamrock Hotel, Houston, Tex., Sept. 23-25. Dr. Sidney Schnur, 411 Medical Arts Bldg., Houston 2, Tex., Chairman.

INTERSTATE POST GRADUATE MEDICAL ASSSOCIATION OF NORTH AMERICA, Municipal Auditorium, Minneapolis, Nov. 1-4. Dr. Erwin R. Schmidt, 1300 University Ave., Madison 6, Wis., Secretary.

KANSAS CITY SOUTHWEST CLINICAL SOCIETY, Kansas City, Mo., Oct. 4-7. Dr. Ira C. Layton, 306 E. Twelfth St., Kansas City 6E, Mo., Secretary.

KENTUCKY STATE MEDICAL ASSOCIATION, Brown Hotel, Louisville, Sept. 21-23. Dr. Bruce Underwood, 620 S. Third St., Louisville 2, Secretary.

MICHIGAN STATE MEDICAL SOCIETY, Sheraton-Cadillac Hotel, Detroit, Sept. 29-Oct. 1. Dr. L. Fernald Foster, 606 Townsend St., Lansing 15, Secretary.

MIDWESTERN SECTION OF AMERICAN FEDERATION FOR CLINICAL RESEARCH, Thorne Hall Auditorium, Northwestern University Medical Campus, Chicago, Oct. 28. Dr. R. L. Grissom, Univ. of Nebraska College of Medicine, Dept. of Internal Medicine, Omaha 5, Secretary.

MISSISSIPPI VALLEY MEDICAL SOCIETY, Hotel Sherman, Chicago, Sept. 22-24. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

MONTANA MEDICAL ASSOCIATION, Hotel Finlen, Butte, Sept. 16-19. Mr. L. R. Hegland, 1236 N. 28th St., Billings, Executive Secretary.

NATIONAL ASSOCIATION FOR MENTAL HEALTH, Hotel Statler, New York, Oct. 23-25. Mr. Robert M. Heininger, 1790 Broadway, New York 19, Executive Director.

NATIONAL PROCTOLOGIC ASSOCIATION, Maryland Hotel, Chicago, Oct. 7-9. Dr. George E. Mueller, 59 E. Madison St., Chicago 2, Executive Secretary.

NATIONAL REHABILITATION ASSOCIATION, Baltimore, Oct. 24-27. Mr. E. B. Whitten, 514-16 Arlington Bldg., 1025 Vermont Ave., N.W., Washington, D. C., Executive Director.

NEW HAMPSHIRE MEDICAL SOCIETY, Mt. Washington Hotel, Bretton Woods, Oct. 3-5. Dr. W. H. Butterfield, 18 School St., Concord, Secretary.

NORTH TEXAS-SOUTHERN OKLAHOMA FALL CLINICAL CONFERENCE, Witchita Falls, Tex., Sept. 22. Dr. C. H. Wilson, 1300 Eighth St., Wichita Falls, Tex., Chairman.

OKLAHOMA CITY CLINICAL SOCIETY CONFERENCE, Oklahoma City, Oct. 25-28. Dr. Charles E. Leonard, 512 Medical Arts Bldg., Oklahoma City 2, Secretary.

OMAHA MID-WEST CLINICAL SOCIETY, Paxton Hotel, Omaha, Oct. 25-28. Dr. Louis E. Moon, 1031 Medical Arts Bldg., Omaha 2, Secretary.

OREGON STATE MEDICAL SOCIETY, Heathman Hotel, Portland, Oct. 13-16. Dr. Charles E. Littlehales, 1115 S. W. Taylor St., Portland 5, Executive Secretary.

PENNSYLVANIA, MEDICAL SOCIETY OF THE STATE OF, Bellevue-Stratford Hotel, Philadelphia, Oct. 17-22. Dr. Harold B. Gardner, 230 State St., Harrisburg, Secretary.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:

Midwest, Indianapolis, Claypool Hotel, Oct. 9. Dr. Wendell A. Shullenberger, 3470 Central Ave., Indianapolis, Chairman.

New England, Hartford, Conn., Oct. 22. Dr. John C. Leonard, 80 Seymour St., Hartford, Conn., Chairman.

New Jersey, Newark, Nov. 3. Dr. Edward C. Klein Jr., 6 South Kingman Rd., South Orange, N. J., Governor.

Southeastern, Edgewater Gulf Hotel, Edgewater Park, Miss., Oct. 15-16. Dr. E. Dice Lineberry, 1529 N. 25th St., Birmingham 4, Ala., Governor.

SOUTHWESTERN SURGICAL CONGRESS, Skirvin Hotel, Oklahoma City, Sept. 20-22. Dr. C. R. Rountree, 1227 Classen Drive, Oklahoma City 3, Secretary.

THE CONSTANTINIAN SOCIETY, The Broadmoor, Colorado Springs, Colo., Sept. 26-29. Dr. C. F. Shook, P. O. Box 1035-36, Toledo 1, Ohio, Secretary.

VERMONT STATE MEDICAL SOCIETY, Mt. Washington Hotel, Bretton Woods, N. H., Oct. 3-5. Dr. James P. Hammond, 337 South St., Bennington, Secretary.

VIRGINIA, MEDICAL SOCIETY OF, Shoreham Hotel, Washington, D. C., Oct. 31-Nov. 3. Mr. Robert I. Howard, 1105 W. Franklin St., Richmond, Executive Secretary.

WASHINGTON STATE MEDICAL ASSOCIATION, Davenport Hotel, Spokane, Sept. 18-22. Dr. Bruce Zimmerman, 1309 Seventh Ave., Seattle 1, Secretary.

WESTERN ASSOCIATION OF RAILWAY SURGEONS, Sun Valley, Idaho, Sept. 23-25. Dr. Leo L. Stanley, 1322 Fifth Ave., San Rafael, Calif., Secretary.

WISCONSIN, STATE MEDICAL SOCIETY OF, Hotel Schroeder, Milwaukee, Oct. 5-7. Mr. Charles H. Crownhart, 704 E. Gorham St., Madison 3, Secretary.

FOREIGN AND INTERNATIONAL

COMMONWEALTH HEALTH AND TUBERCULOSIS CONFERENCE, Royal Festival Hall, London, England, June 21-25, 1955. Mr. J. H. Harley Williams, Tavistock House North, Tavistock Square, London, W.C.1, England, Secretary General.

CONFERENCE OF INTERNATIONAL UNION AGAINST TUBERCULOSIS, Madrid, Spain, Sept. 26-Oct. 2, 1954. Secretariat, Escuela de Tisiologia, Ciudad Universitaria, Madrid, Spain.

CONFERENCE OF THE SOLVAY INSTITUTE OF SOCIOLOGY, Universiti Libre de Bruxelles, Brussels, Belgium, Oct. 18-23, 1954. For information write: Assistant to the Secretary, A. Dorsinfang Smets, Solvay Institute of Sociology, Parc Leopold, Brussels 4, Belgium.

CONGRESS OF INTERNATIONAL ASSOCIATION OF APPLIED PSYCHOLOGY, London, England, July 18-23, 1955. Dr. C. B. Frisby, National Institute of Industrial Psychology, 14 Welbeck St., London, W.1, England, President.

CONGRESS OF INTERNATIONAL ASSOCIATION FOR THE PREVENTION OF BLINDNESS, New York, N. Y., U. S. A., Sept. 12-17, 1954. Professor Franceschetti, 2 avenue Mirmot, Geneva, Switzerland, Secretary-General.

CONGRESS OF THE INTERNATIONAL DIABETES FEDERATION, Cambridge, England, July 4-8, 1955. Mr. James G. L. Jackson, 152 Harley St., London, W.1, England, Executive Secretary General.

CONGRESS OF INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY, Vichy, Paris, and Enghien, France, Sept. 24-27, 1954. Dr. Francon, 55, rue des Mathurins, Paris 8e, France, Secretary-General.

HEALTH CONGRESS OF THE ROYAL SANITARY INSTITUTE, Bournemouth, England, April 26-29, 1955. Mr. P. Arthur Wells, Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.1, England, Secretary.

INTER-AMERICAN CONGRESS OF RADIOLOGY, Shoreham Hotel, Washington, D. C., U. S. A., April 24-29, 1955. Dr. Eugene P. Pendergrass, 3400 Spruce St., Philadelphia 4, Pa., U. S. A., Secretary-General.

INTER-AMERICAN SESSION, AMERICAN COLLEGE OF SURGEONS, Universidad Mayor de San Marcos de Lima, Lima, Peru, S. A., Jan. 11-14, 1955. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

INTERNATIONAL ANATOMICAL CONGRESS, Paris, France, July 25-30, 1955. Prof. Gaston Cordier, 45, rue des Saints-Pères, Paris 6e, France, Secretary-General.

INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Ambassador Hotel, Los Angeles, Calif., U. S. A., Oct. 10-14, 1954. For information write: Dr. T. H. Seldon, 102-110 Second Avenue S. W., Rochester, Minn., U. S. A.

INTERNATIONAL CONGRESS OF BIOCHEMISTRY, Brussels, Belgium, Aug. 1-6, 1955. Prof. C. Liebecq, 17 Place Delcour, Liege, Belgium, Secretary-General.

INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY, Lausanne, Switzerland, May 26-31, 1955. Professor Hauduroy, 19 rue Cesar Roux, Lausanne, Switzerland, Secretary-General.

INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST, Barcelona, Spain, Oct. 4-8, 1954. Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Ill., U. S. A., Executive Secretary.

INTERNATIONAL CONGRESS ON THE HISTORY OF MEDICINE, Rome and Salerno, Italy, Sept. 13-20, 1954. For information write: Segreteria XIV Congresso Internazionale di Storia della Medicina, Instituto di Storia della Medicine, Citta Universitaria, Rome, Italy.

INTERNATIONAL CONGRESS OF HYDATID DISEASE, Madrid, Spain, Sept. 25-30, 1954. Dr. Jesus Calvo Melendro, Hospital Provincial, Sorea, Spain, Secretary-General.

INTERNATIONAL CONGRESS OF INDUSTRIAL MEDICINE, Naples, Italy, Sept. 13-19, 1954. Professor Scipione Caccuri, Director, Institute of Industrial Medicine Policlinico, Naples, Italy, Chairman, Organizing Committee.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Stockholm, Sweden, Sept. 15-18, 1954. Professor Anders Kristenson, Karolinska Sjukhuset, Stockholm 60, Sweden, Secretary-General.

INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY, Luxemburg, Luxemburg, Nov. 7-12, 1954. Colonel A. R. Vernengo, Direcion General de Sanidad Militar, Pozos 2045, Buenos Aires, Argentina, S. A., Secretary-General.

INTERNATIONAL CONGRESS OF NUTRITION, Amsterdam, Netherlands, Sept. 13-17, 1954. Dr. M. van Eekelen, Centraal Instituut voor Voedingsonderzoek T.N.O., 61 Catharynesingel, Utrecht, Netherlands, General Secretary.

INTERNATIONAL CONGRESS OF OPHTHALMOLOGY, University of Montreal and McGill University, Montreal, Canada, Sept. 9-11, 1954, and Waldorf-Astoria, New York, N. Y., U. S. A., Sept. 12-17, 1954. Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minn., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF PLASTIC SURGERY, Stockholm, Sweden, Aug. 1-4, 1955, and Uppsala, Sweden, Aug. 5, 1955. Dr. Tord Skoog, Uppsala, Sweden, General Secretary.

INTERNATIONAL FEDERATION OF MEDICAL STUDENT ASSOCIATIONS, Rome, Italy, Oct. 1-5, 1954. Mr. Jorgen Falck Larsen, 12, Kristianiagade, Copenhagen Ø, Denmark, General Secretary.

INTERNATIONAL HOSPITAL CONGRESS, Lucerne, Switzerland, May 30-June 3, 1955. Capt. J. E. Stone, International Hospital Federation, 10 Old Jewry, London, E.C.2, England, Hon. Secretary.

INTERNATIONAL SOCIETY OF BLOOD TRANSFUSION, Paris, France, Sept. 12-19, 1954. For information write: Colonel Julliard, Société Internationale de Transfusion Sanguine, 53 boulevard Diderot, Paris 12e, France.

INTERNATIONAL SURGICAL CONGRESS, Geneva, Switzerland, May 23-26, 1955. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

JAPAN MEDICAL CONGRESS, Kyoto University and Kyoto Prefectural Medical College, Kyoto, Japan, April 1-5, 1955. Dr. Mitsuharu Goto, University Hospital, Medical Faculty of Kyoto University, Kyoto, Japan, Secretary-General.

LATIN AMERICAN CONGRESS OF ANESTHESIOLOGY, Sao Paulo, Brazil, S. A., Sept. 12-18, 1954. Dr. Zairo E. G. Vieira, Praca Floriano, 55-7°, And., Rio de Janeiro, Brazil, S. A., Secretario.

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE, Lima, Peru, S. A., Feb. 14-19, 1955. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York 21, N. Y., U. S. A., Executive Director.

MEDICAL JOURNALISM MEETING, Exposition Universelle Romaine, Rome, Italy, Sept. 30, 1954. Dr. H. Clegg, B.M.A. House, Tavistock Square, London W.C.1, England, Secretary.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION CONGRESS, Lake Garda, Italy, Sept 15-21, 1954. Dr. Ada Chree Reid, 118 Riverside Drive, New York 24, N. Y., U. S. A., President.

PAN-AMERICAN ACADEMY OF GENERAL PRACTICE, Lima, Peru, S. A., Feb. 11-25, 1955. Dr. Arturo Martinez, 54 East 72nd St., New York 21, N. Y., U. S. A., Secretary.

PAN AMERICAN HOMEOPATHIC MEDICAL CONGRESS, Hotel Gloria, Rio de Janeiro, Brazil, S. A., Oct. 2-13, 1954. Dr. Paul S. Schantz, 103 West Main St., Ephrata, Pa., U. S. A., Executive Secretary.

PAN-PACIFIC SURGICAL CONGRESS, Honolulu, Hawaii, Oct. 7-18, 1954. Dr. F. J. Pinkerton, Suite 7, Young Bldg., Honolulu 13, Hawaii, Director General.

WORLD CONGRESS OF CARDIOLOGY, Washington, D. C., U. S. A., Sept. 12-18, 1954. Dr. L. W. Gorham, 44 East 23rd St., New York 10, N. Y., U. S. A., Secretary-General.

WORLD CONGRESS OF INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, Scheveningen-The Hague, Netherlands, Sept. 13-1-7, 1954. Secretariat: Miss H. P. Post, Pieter Lastmarkade 37, Amsterdam Z, Netherlands.

WORLD MEDICAL ASSOCIATION, Rome, Italy, Sept. 26-Oct. 2, 1954. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral.* Ann Arbor, Oct. 15-18. To be eligible candidates must have completed thirty-six months of training by October 1. Final date for filing application was May 1. Exec. Sec., Miss Janet Newkirk, 129 E. 52nd St., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* New York, Sept. 22-24 (candidates on the east coast). The closing date for acceptance of applications was April 1. *Written.* Oct. 18. Final date for acceptance of applications was May 1. *Subspecialties. Allergy.* New York, Sept. 23 and *Pulmonary Disease.* New York, Sept. 24. Closing date for acceptance of applications was May 10. Exec. Sec.-Treas., Dr. William A. Werrell, One West Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* New Haven, November. Final date for filing application is November 1. Sec., Dr. Leonard T. Furlow, 600 S. Kingshighway, St. Louis 10.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I.* Various Centers, Feb. 4. *Part II,* Chicago. Deadline for receipt of applications is October 1. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Practical examinations, 1954.* New York City, Dec. 5-9. Final date for filing applications was July 1, 1953. *Written, 1955.* Various cities, Jan. 24-25. Final date for filing application was July 1, 1954. *Practical examinations, 1955.* Philadelphia, June 10-15, Chicago, Oct. 9-14. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral and Written.* Los Angeles, Jan. 26-28. Final date for filing applications for Part II was Aug. 15. Sec., Dr. Harold A. Sofield, 122 South Michigan Ave., Chicago 3, Illinois.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York City, Sept. 13-17; Richmond, Va., March 6-10, 1955. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Miami, Nov. 29-30-Dec. 1. Sec., Dr. William B. Wartman, 303 E. Chicago Ave., Chicago 11.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Chicago, Oct. 8-10 and New Haven, Dec. 3-5. Ex. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: *Oral and Written.* Washington, D. C., Sept. 5-6. Final date for filing applications was March 31. Sec., Dr. Earl C. Elkins, 30 N. Michigan Ave., Chicago.

AMERICAN BOARD OF PLASTIC SURGERY: Atlanta, Ga., Oct. 20-22. Final date for filing case reports was June 1. Final date for filing case reports for spring 1955 examination is Jan. 1. Corres. Sec., Miss Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8.

AMERICAN BOARD OF PREVENTIVE MEDICINE: *Parts I and II.* Buffalo, Oct. 9-11. Final date for filing applications was July 15. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

AMERICAN BOARD OF PROCTOLOGY: *Part II.* Philadelphia, Sept. 25-26. *Examination in Proctology and Anorectal Surgery.* Sec., Dr. Stuart T. Ross, 131 Fulton Ave., Hempstead, New York.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 13-14; New Orleans, Feb. 28-March 1, 1955; San Francisco, Mid-October, 1955; New York City, December, 1955. Sec., Dr. David A. Boyd, 102-110 Second Ave. S.W., Rochester, Minnesota.

AMERICAN BOARD OF SURGERY: *Part I.* Oct. 28; March 31 and Oct. 27, 1954. *Part II.* New York, Oct. 12-13; Chicago, Nov. 9-10; St. Louis, Dec. 14-15; Los Angeles, Jan. 11-12; Galveston, Jan. 15-16; Washington, Feb. 8-9; Cincinnati, March 8-9; New Orleans, April 12-13; Philadelphia, May 10-11 and Boston, June 14-15. Sec., Dr. John B. Flick, 225 S. 15th St., Philadelphia 2.

DEATHS

Crumbine, Samuel Jay, Jackson Heights, N. Y.; born in Emlenton, Pa., Sept. 17, 1862; Cincinnati College of Medicine and Surgery, 1889; member of the Kansas State Board of Health from 1898 to 1904, then secretary and executive officer until 1923; his methods for protecting the health of the people of Kansas attracted nation-wide interest; through his crusade, the common drinking cup was abolished from public places by the Kansas state legislature, and later he put the common roller towel out of use; responsible for national health campaigns based on slogans like "Swat That Fly," "Don't Spit on the Sidewalk," and "Sleep with Your Windows Open"; for many years dean of the University of Kansas School of Medicine, Lawrence-Kansas City, where he was professor of preventive medicine; while in Topeka he was a member of the House of Delegates of the American Medical Association, serving in 1921; on Dec. 3, 1908, was elected the first president of the newly organized Kansas Society for the Study and Prevention of Tuberculosis; past president of the Association of Food, Dairy, and Drug Officials of the United States; in 1914 president of the Conference of State and Provincial Health Authorities of North America and in 1925 appointed field secretary; in 1923 became director of state relations and in 1925 general director of the American Child Health Association and established a six year program for the relief and rehabilitation of Puerto Rican children; the state of Kansas in 1943 honored him: when the Crumbine plaque was unveiled in the Topeka Hall of Fame, a "Dr. Crumbine Week" was officially declared throughout Kansas, and the Missouri Pacific Railroad, the first railroad to abolish the "common drinking cup," sponsored a publicity campaign throughout 11 states designating July as "Dr. Crumbine Month"; in 1952 the Kansas Public Health Association established the Samuel J. Crumbine award for meritorious service to public health; his autobiography is entitled "Frontier Doctor"; died in New York Polyclinic Hospital July 12, aged 91, of postoperative pulmonary edema.

Moorman, Lewis Jefferson ⊕ Oklahoma City; born in Litchfield, Ky., Feb. 9, 1875; Hospital College of Medicine, Louisville, 1901; professor emeritus of medicine at the University of Oklahoma School of Medicine, where he was dean from 1931 to 1935; specialist certified by the American Board of Internal Medicine; secretary-treasurer of the Oklahoma State Medical Association, of which he was president 1919-1920; honorary president for life, one of the founders, and for 29 years president of the Oklahoma County Health Association; assisted in the organization of the Oklahoma City Tuberculosis Society and was its first president in 1918; past president of the National Tuberculosis Association, Oklahoma Public Health Association, American Trudeau Society, Southern Tuberculosis Conference, and the Southern Medical Association; in 1935 was named to Oklahoma's Hall of Fame by the Oklahoma Memorial Hospital in recognition of his achievements in medicine; member of the House of Delegates of the American Medical Association in 1921; fellow of the American College of Physicians and the American Clinical and Climatological Association, of which he was at one time vice-president; honorary member of staff, St. Anthony Hospital; affiliated with University, Wesley, and Mercy hospitals; formerly medical director and owner of the Farm Sanatorium; served as medical superintendent of the State University Hospital and Crippled Children's Hospital; editor-in-chief of the *Journal of the Oklahoma State Medical Association;* died Aug. 2, aged 79, of cancer.

Graves, Stuart ⊕ Ramer, Ala.; born in Boonville, N. Y., Feb. 6, 1879; Syracuse University College of Medicine, 1911; dean emeritus and professor emeritus of pathology at the University of Alabama School of Medicine in Tuscaloosa, where he was dean from 1928 to 1947; professor of pathology and bacteriology at the University of Louisville (Ky.) School of Medicine from 1914 to 1928 and dean from 1922 to 1928; acting state health officer of Alabama 1929-1930; fellow of the American College of Physicians; acting assistant surgeon for the U. S. Public Health Service from 1918 to 1922, and from 1920 to 1922 a member of the medical advisory committee of the Kentucky State Board of Charities and Corrections; formerly pathologist at the City Hospital in Louisville, Ky.; received the LL.D. degree from University of Alabama in 1937; died in Blowing Rock, N. C., July 14, aged 75.

Cosgrove, Clair Peter ⊕ Los Angeles; born in Dillon, Mont., Jan. 15, 1904; Northwestern University Medical School, Chicago, 1931; member of the American Academy of General Practice; vice-president of the Los Angeles County Medical Association; first elected president of the Los Angeles County Chapter of the California Academy of General Practice; member of the Hollywood Academy of Medicine, Crenshaw Academy of Medicine, and past president and an active member of the Medical-Dental Veterans Association of Los Angeles; served during World War II; member of the staffs of the Crenshaw Hospital, Daniel Freeman Memorial Hospital, and the Methodist Hospital, where he died June 29, aged 50.

Bishop, Eliot, Brooklyn; born in 1880; Dartmouth Medical School, Hanover, N. H., 1904; specialist certified by the American Board of Obstetrics and Gynecology; past president of the Brooklyn Gynecological Society and the New York Obstetrical Society; a founder and past president of the Obstetrical and Gynecological Travel Club; attending gynecologist and obstetrician at Brooklyn Hospital; consulting obstetrician at Bay Ridge Hospital, Norwegian-Lutheran Deaconesses' Home and Hospital, and Methodist Hospital in Brooklyn, and at John T. Mather Memorial Hospital in Port Jefferson; died in Portland, Maine, July 25, aged 74, of heart disease.

Allen, Silas Gilbert ⊕ Stanton, Neb.; Omaha Medical College, 1901; affiliated with Lutheran Hospital and Our Lady of Lourdes Hospital; local surgeon of the Chicago and Northwestern Railroad; died in Norfolk July 6, aged 80, of cerebral hemorrhage.

Appold, George Dewey ⊕ Bergenfield, N. J.; Long Island College Hospital, Brooklyn, 1925; fellow of the International College of Surgeons and the American College of Surgeons; instructor of orthopedic surgery at the New York University College of Medicine; affiliated with Holy Name Hospital in Teaneck and the Englewood (N. J.) Hospital; died June 7, aged 55, of coronary thrombosis.

Bach, Robert J., Milwaukee; Marquette University School of Medicine, Milwaukee, 1913; member of the National Gastroenterological Association; for many years surgeon for the U. S. Public Health Service; served as chief of staff of St. Mary's Hospital, where he died June 5, aged 67, of pulmonary embolism.

Barb, Kirk Bentley ⊕ Camden, N. J.; University of Oklahoma School of Medicine, 1915; chief medical examiner in city public schools; died July 22, aged 68, of coronary occlusion.

Bassett, Thomas Richard ⊕ Mount Pleasant, Texas; Baylor University College of Medicine, Dallas, 1901; past president of the Titus County Medical Society; county health officer; died in Dallas April 19, aged 80, of arteriosclerosis.

Callaway, James Willis ⊕ LaJolla, Calif.; Northwestern University Medical School, Chicago, 1932; specialist certified by the American Board of Internal Medicine; member of the National Gastroenterological Association; fellow of the American College of Physicians; served during World War II; affiliated with Scripps Memorial Hospital and Scripps Metabolic Clinic, where he died June 25, aged 46, of carcinoma of the pancreas.

Canizaro, Vito Joseph ⊕ Biloxi, Miss.; Regia Università degli Studi di Roma. Facoltà di Medicine e Chirurgia, Italy, 1935; served during World War II; died July 27, aged 47.

Carswell, James Jr. ⊕ McKinney, Texas; University of Illinois College of Medicine, Chicago, 1928; clinical assistant professor of surgery at Southwestern Medical School of the University

⊕ Indicates Member of the American Medical Association.

of Texas, Dallas; specialist certified by the American Board of Thoracic Surgery; president of the Collin County Medical Society; member of the American Trudeau Society; affiliated with the Veterans Administration Hospital, where he died July 9, aged 52, of septicemia.

Conzelmann, Fred John ✠ Stockton, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association; veteran of the Spanish-American War and World War I; for many years on the staff of the Stockton State Hospital; died June 26, aged 78, of angina pectoris.

Culver, George Jacob ✠ Au Sable Forks, N. Y.; Albany Medical College, 1914; for many years county coroner; health officer; served during World War I; member of the staffs of the Champlain Valley and Physicians hospitals in Plattsburg; past president of the Rotary Club of Au Sable Forks; died July 4, aged 63, of intestinal hemorrhage.

Cummin, John White ✠ Boston; Harvard Medical School, Boston, 1896; fellow of the American College of Surgeons; served on the faculty of his alma mater; formerly on the staff of the Massachusetts General Hospital; died at Phillips House July 16, aged 83.

Doolittle, Sam Wade, Lancaster, Wis.; Hospital College of Medicine, Louisville, Ky., 1894; served overseas during World War I; died in the Madison (Wis.) General Hospital July 3, aged 83, of arteriosclerosis.

Dorvas, Adam Peter ✠ Philadelphia; Temple University School of Medicine, Philadelphia, 1915; served during World War I; associated with Skin and Cancer Hospital for many years; died in Temple University Hospital July 21, aged 64.

Douglas, Thomas Harrelson Jr. ✠ Camarillo, Calif.; Washington University School of Medicine, St. Louis, 1939; member of the Missouri State Medical Association; died July 5, aged 41.

Duncan, Frederick Ransom, Waldron, Ark.; Memphis (Tenn.) Hospital Medical College, 1903; died in St. Edward's Hospital, Fort Smith, May 14, aged 78, of congestive heart failure.

Essick, Charles Rhein ✠ Reading, Pa.; Johns Hopkins University School of Medicine, Baltimore, 1909; member of the American Association of Anatomists; served as director of the Pennsylvania Tuberculosis Society, as president of the Reading Tuberculosis Association, and as vice-president of the board of the Guidance Institute of Berks County, which he helped to establish; died June 26, aged 71.

Frank, Paul George ✠ Kew Gardens, N. Y.; Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1897; on the staff of the Harlem Hospital, New York City; died in Wickersham Hospital, New York City, April 18, aged 80, of heart disease.

Freed, Cecil Forest ✠ Reading, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1920; fellow of the American College of Surgeons; on the staff of the Reading Hospital; died June 13, aged 60.

Freymann, Walter ✠ West New York, N. J.; Friedrich-Wilhelms Universität Medizinische Fakultät, Berlin, Prussia, 1920; member of the National Gastroenterological Association; died July 5, aged 61.

Gill, James Pope ✠ San Antonio, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1926; captain in the regular Army until 1931; served during World War II; member of the county health board; affiliated with Santa Rosa Infirmary; died April 4, aged 54, of chronic myocarditis and cerebral thrombosis.

Gore, George Walton, Goreville, Ill.; St. Louis College of Physicians and Surgeons, 1905; died in Herrin (Ill.) Hospital July 8, aged 80, of acute congestive heart failure.

Hagen, William Andrew ✠ Muskegon, Mich.; Grand Rapids Medical College, 1902; died June 21, aged 77, of a heart attack.

Honeycutt, Joseph B., Waco, Texas; University of Louisville (Ky.) Medical Department, 1897; died June 15, aged 85.

Hubley, Benjamin Frank, Norristown, Pa.; Medico-Chirurgical College of Philadelphia, 1891; died in Montgomery Hospital June 5, aged 85.

Johnston, Walter Scott, Hemet, Calif.; Homeopathic Medical College of Missouri, St. Louis, 1908; formerly associated with the Indian Service; died July 1, aged 76.

Kas, Thomas D. ✠ Sutherland, Iowa; Wisconsin College of Physicians and Surgeons, Milwaukee, 1909; at one time secretary of the Iowa State Department of Health; served during World War I; on the staff of the Sioux Valley Memorial Hospital; died July 19, aged 71, of cerebral hemorrhage.

Larkin, Henry Watson ✠ Guthrie, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1920; formerly superintendent of the Oklahoma Methodist Hospital; died July 10, aged 84, of pneumonia.

Maguire, Elliott Francis ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1943; specialist certified by the American Board of Internal Medicine; served during World War II; died July 18, aged 39.

Meador, Clarence Nelson ✠ Corpus Christi, Texas; Northwestern University Medical School, Chicago, 1917; from 1917 to 1922 a lieutenant in the regular Navy; in 1927 health officer of Caddo County, Okla.; president of the Fred Roberts Memorial Hospital staff in 1938; died April 17, aged 64, of coronary occlusion.

Monroe, Alfred E. ✠ Kansas City, Mo.; Marion-Sims College of Medicine, St. Louis, 1893; died in the Bothwell Hospital, Sedalia, June 30, aged 84, of cerebral hemorrhage.

Nicoll, David T. ✠ Bronxville, N. Y.; Hering Medical College, Chicago, Homeopathic, 1903; member of the Kansas Medical Society; practiced in Topeka, Kan., for many years; died July 12, aged 90.

Noonan, William Joseph ✠ Minneapolis; School of Medicine of the Division of Biological Sciences, University of Chicago, 1935; specialist certified by the American Board of Urology; clinical assistant professor of surgery (urology) University of Minnesota Medical School; served during World War II; died July 21, aged 44.

Olsen, Xenophon ✠ San Bernardino, Calif.; University Medical College of Kansas City, Mo., 1900; an Associate Fellow of the American Medical Association; died in St. Bernardine's Hospital July 13, aged 82, of myocardial infarction.

Pearce, Charles E., Knoxville, Tenn.; (licensed in Tennessee in 1903); died in the Knoxville General Hospital July 8, aged 79, of arteriosclerotic heart disease.

Raphael, Isidor J. ✠ Evansville, Ind.; Rush Medical College, Chicago, 1923; served during World War II; died in St. Mary's Hospital July 4, aged 56, of acute monocytic leukemia.

Roby, Joseph ✠ Rochester, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1896; for many years deputy health officer; served on the board of Rochester General Hospital, where he was for many years chief of medical staff; died in the Strong Memorial Hospital July 15, aged 82.

Samuel, Ira Jay ✠ Altoona, Ala.; University of Nashville (Tenn.) Medical Department, 1908; city health officer; died July 23, aged 72, of injuries received in an automobile accident.

Shelby, Hudson Swain ✠ Oklahoma City, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1933; died July 14, aged 53, of coronary occlusion.

Tuttle, Ralph Weare ✠ Wolfeboro, N. H.; Harvard Medical School, Boston, 1909; member of the New England Obstetrical and Gynecological Society; past president and vice-president of the New Hampshire Medical Society; for two terms president of the Carson County Medical Society; chief of staff at the Huggins Hospital, where he died July 5, aged 72, of pneumonia.

Woodbury, Stillman Philetus ✠ Millers Falls, Mass.; Long Island College Hospital, Brooklyn, 1887; for many years school physician; affiliated with Farren Memorial Hospital in Montague City, and Franklin County Public Health Department in Greenfield; died in Hadley June 12, aged 96.

FOREIGN LETTERS

AUSTRIA

Acute Myocardial Infarction.—At the May 28 meeting of the Society of Physicians of Vienna, Dr. O. Zimmermann of Meinzingen reviewed 356 cases of myocardial infarction observed during the years 1948 to 1953. Of these 73.4% were men. The ages of patients ranged from 30 to 91 years. Of the men 67.6% were less than 65 years old and 32.4% were 65 or over, but of the women only 36.1% were less than 65 years old and 63.9% were 65 or over. The total mortality was 46.6%. The mortality among patients less than 65 years old was 30% in men and 48.5% in women. Among the patients of 65 or over the mortality of men was 60.7% and of women, 77.7%. Anginal attacks or symptoms had existed in some patients for 21 years. Nearly 25% of the patients had had such difficulties for over two years, and 14.6% for between three months and two years. In nearly 25%, anginal attacks had been present for less than two months or for a few days before the infarct occurred; 14% had been free from symptoms previous to the infarct; in 7.5% infarction was without symptoms; and in 5% no history was available. In 14% the history indicated that the infarct represented a relapse.

The belief that myocardial infarction is a disease of executives is no longer held. Syphilis, which was found in 2% of the men and 1% of the women, plays a very subordinate role in acute myocardial infarction. Hypertension, however, which was observed in 22% of the men and in 48% of the women, is important and is chiefly responsible for the increased mortality in women; generally speaking, it makes the prognosis of acute myocardial infarction much more unfavorable. The role of diabetes, which was present in 2.7% of the men and 3% of the women (in America 10% and 17%), is much less important, but acute coma or excessive insulin dosage can become dangerous in these patients. A history of excessive use of tobacco was elicited in 40% of the men and 6% of the women. Eleven per cent of the men and 1% of the women were in executive positions. This fact, together with the relatively high percentage of women with myocardial infarction, militates against the concept that this is chiefly a disease of executives. The importance of all factors that favor a neurocirculatory dystonia has been repeatedly emphasized by Zimmermann over the last 20 years. The incidence of myocardial infarction has rapidly increased in younger persons on the basis of a hypersensitive sympathetic nervous system and also, frequently, as the result of the earlier appearance of manifestations of a wearing-out of the coronary arteries; in older patients the incidence, however, parallels the increase in the aging process as the manifestation of the simultaneously increasing severity of coronary sclerosis. Sympathetic factors are of much less importance in this older group.

In men infarcts of the anterior and posterior wall were of equal frequency; in women, however, there were 20% more infarcts of the posterior than of the anterior wall. The mortality was 25% less in men with infarcts of the posterior wall only. At autopsy infarcts of the septum were found in about 13% of the cases; they never occurred alone. A pure supra-apical or lateral infarct was never observed at autopsy. Old indurations were observed with new infarcts in 58.4% of the cases. Severe coronary sclerosis and stenosis without thrombosis or embolism were observed in 33.5% of the cases of infarction seen at autopsy. In three-fourths of all cases severe coronary sclerosis was seen at autopsy; in the remaining one-fourth, only slight sclerosis. The coronary arteries were free of sclerosis throughout in seven cases.

The concept "threatening infarct" is regarded as doubtful. The short duration of previous anginal complaints in many patients and, on the other hand, their existence for many years, the fact that anginal disturbances may completely disappear at advanced ages, and the occurrence of the suddenly appearing and the silent infarct render this concept extremely vague, and thus there is no sure means of preventing infarction. In 83.5% of the patients the electrocardiographic diagnosis was in complete agreement with the clinical and postmortem aspects, and chest leads clarified the diagnosis in only 1.3%. Of the cases discovered at autopsy 11.2% were not explained by electrocardiography; in 5.3% no electrocardiographic records were available, because death was so sudden or a silent infarct occurred in comatose patients after an earlier electrocardiographic examination. The unexplained 11.2% showed severe atypical electrocardiographic records such as bundle branch block and arborization block.

Although the importance of chest wall leads has been amply demonstrated, their interpretation is not easy. They show significant diagnostic features in patients with infarction of the anterior wall, but in those with infarction of the posterior wall the findings are not so consistent. In supra-apical infarcts characteristic Wilson leads may furnish definite proof with almost normal or completely normal standard leads. Mild pathological changes that are only suggestive, however, often do not permit a definite diagnosis of infarction even with Wilson leads. The electrocardiographic diagnosis of the isolated lateral infarct is very difficult and unreliable even with chest wall leads. A chest wall lead from the left rim of the sternum and from the apical beat is usually adequate. The electrocardiogram does not permit a reliable conclusion as to the severity of the individual lesion, and even less a prognosis or an indication of the best treatment to be used. The age of the infarct likewise cannot be ascertained by the electrocardiogram after the first changes have subsided. Even a myocardial scar that has been present for years may give the impression of a relatively recent myocardial infarct.

DENMARK

The Health of Greenland.—Such profound changes have recently occurred in Greenland that in 1948 government authorities in Denmark appointed a commission to discuss and plan a sweeping reorganization in every field. In 1950 the findings of this commission were dealt with by the Danish Rigsdag, which adopted legislation affecting social, economic, political, judicial, cultural, and administrative conditions. Reviewing these laws, Dr. Mogens Fog-Poulsen explains in *Ugeskrift for læger* for July 29, 1954, how they function with regard to public health. With an area 50 times greater than that of Denmark, Greenland had a population at the end of 1952 of only 23,469 native Greenlanders and 1,267 settlers from Denmark. The original Greenlanders were Eskimos, descendants from North American nomads. The Greenlanders of today are a mixture of Eskimos and North Europeans. While seals and small whales were formerly the main source of food, the teeming waters round the coast have now done much to convert the Greenlander from hunting to fishing. The new public health law of May 1, 1951, deals with 13 different medical districts, each with a hospital of its own. In 1952 there were, altogether, 411 hospital beds, which in that year accommodated 3,441 patients. There were also 70 beds in three children's sanatoriums dealing with surgical tuberculosis in children between the ages of 2 and 14 years. A tuberculosis sanatorium with 211 beds is to be opened in November, 1954. In addition to the hospitals provided with a drug department there are some 100 depots of drugs and dressings in different parts of Greenland. Drugs not requiring a physician's prescription can also be bought in any of 66 shops.

The items in these letters are contributed by regular correspondents in the various foreign countries.

ENGLAND

Nursing Homes.—An annotation in the *British Medical Journal* of June 12, 1954, describes the changes in the nursing homes of London in the past two decades. At the end of 1937, 170 homes were registered. Evacuation, damage by enemy action, shortage of staff, and other difficulties reduced the number of active homes to 108 in 1945, and the homes that survived the war had great difficulty in maintaining their standards. The replacement of equipment (particularly linen), rationing, and the shortage of skilled staff had to be surmounted during the difficult war years, and most nursing homes were then faced with heavy expenditure for repairs and redecoration in the immediate postwar years. This alone was often enough to discourage the owners of the smaller home from continuing. In addition, the prewar nurse's salary of from $168 to $252 a year had by 1953 increased to $980 plus an allowance for living out. It was not surprising, therefore, that between 1947 and 1953 there was a further drop in the number of nursing homes from 63 to 48. This drop of 24% in the number of homes in London since the National Health Service began, when measured in number of beds available, shows a decrease of 9.4%. During this same period, 19 new homes were registered, but 34 were closed.

Rising costs have alarmed the users as well as the owners of nursing homes. Accommodations that before the war cost from $14.70 to $23.50 a week, with a maximum of about $35, today cost $32 to $70 a week—not a disproportionate increase when compared with rises in costs. Fees of this magnitude, which may be borne for a short period by the acutely ill, are an impossible burden on elderly patients with small, fixed incomes. In many cases, the expense is met for a time out of capital or by relatives or friends. This is one of the main reasons why the number of empty beds in nursing homes has increased. There are still some small homes with 6 to 10 beds charging about $17.50 upward, but at such a figure and with present-day prices no more than the bare minimum of nursing staff can be provided, and the food can hardly be of the highest quality. Homes of this type appear to be on the border of solvency and are not likely to survive. On the other hand, a few homes charge as much as $102 a week. These homes are in constant use by physicians and surgeons of high standing, and the professional skill and care are matched by a service similar to that of a luxury hotel.

The introduction of the National Health Service came at a time when the falling birth rate caused a reduction in the admissions to maternity beds in nursing homes, and it coincided with a period when maternity wards were being expanded in the hospitals. The number of confinements taking place in nursing homes in London was 3,167 in 1947; in 1952 this number had fallen to 1,091. This large drop cannot be wholly accounted for by the fall in the birth rate from the exceptionally high figure of 20.9 per 1,000 population in 1947 to 15.3 in 1952. Recent annual reports of the medical officers of health of other large cities show the same trend. Most homes found that in the postwar years less use was being made of their operating rooms and more beds were being used for medical cases, particularly for the treatment of the chronically sick or senile patients.

State-registered nurses are not as a rule eager to work in private nursing homes, and the comparatively uneventful nursing of the chronically sick does not greatly attract them. It is the state-enrolled assistant nurses, or the older women, trained, but without state registration, who nurse such patients. The organization of comprehensive home-nursing and home-help services under the local health authority and the establishment of old persons' homes under welfare provisions, while in no sense a replacement of the private nursing home, have added to the facilities available and undoubtedly had some effect in reducing the numbers of persons who might have gone into a private home. The borderline between what constitutes nursing of the sick and caring for the old and enfeebled is ill defined. Establishments that provide care for the aged by ordinary unskilled staff fill a real need, and there are good reasons why some of the smaller nursing homes should turn their attention to this type of person who so often fails to find the accommodations he or she is seeking.

Reducing Waiting-Time of Outpatients.—Hospital authorities throughout England and Wales have been asked by the Minister of Health to review the working of outpatient departments in order to remove all reasonable causes of complaint. Matters that he thinks call for special attention are appointments systems, punctuality of staff, and reception of patients. While much public criticism may well arise from lack of an adequate appreciation of the difficulties involved, the complaints made have been so widespread that they suggest that at a number of hospitals the suggestions previously made with regard to reducing the waiting time of outpatients either have not been put into effect or are not being successfully applied. The main points of criticism are that (1) patients called for an appointment at a particular time frequently have to wait for an hour or more before they are seen by the physician; (2) the consultants in charge of clinics often arrive late; (3) appointment systems are badly organized; and (4) little attempt is made to explain to patients the reason for delays, to win their confidence, or to consider their comfort or needs.

The minister believes that appointment systems should not only be universal but designed to ensure, as far as possible, that each patient is scheduled to arrive at the time he is expected to see the physician. The old practice of "multiple" or "block" bookings should be discontinued. The needs of parents with small children at home and of patients coming from a distance by infrequent buses or train also clearly call for separate consideration. It should be impressed on consultants that the success of the appointment system depends on their being present on time, and an administrative officer of adequate seniority should be made responsible for the efficient running of the appointment system. The minister urges special care in selecting the staff responsible for receiving patients and suggests that they should remember that patients are often anxious, bewildered, or even frightened and that it is essential to attend to their needs and comfort. Much criticism could be avoided by developing better relations with patients and with the public at large. A helpful and kindly approach to outpatients by receptionists and other staff members is only one example of this. Much more could be done to interest the public in the work of the hospitals, the difficulties with which they have to contend, and the steps being taken to overcome them.

On the other hand many patients arrive late or fail to keep the appointment made for them. One general hospital in a period of five weeks found that 10% of patients failed to come and that often the consultant was left waiting. There are several reasons for this casual and thoughtless behavior, the effects of which could have been prevented if the patient had notified the hospital of his intention not to attend. The chief reason is probably that, in the intervening time from the making of the appointment, the patient improved and decided it not worth while to come. Another reason is forgetfulness, and another is that the general practitioner perhaps need not have referred the patient to the hospital. Again another is that instructions as to the appointment were not made sufficiently clear. Finally, it not infrequently happens that in the intervening period the patient has died, nobody thinks of telling the hospital.

Medical Administration.—Dr. D. F. Hutchinson delivered the presidential address on medical administration to the metropolitan counties branch of the British Medical Association, and it is quoted in the *British Medical Journal* of June 12. After surveying the past and the development of the hospital superintendent, he said that, since 1911 when the National Health Insurance scheme started, the general medical services became for the first time subject to a certain amount of government control and that local medical and panel committees were formed to look after the interests of the medical profession in this new situation. Yet in the whole course of National Health Insurance scheme only one such committee, that of London, found it necessary to appoint a full-time secretary. As the welfare state grew, however, there was more and more scope for the medical administrator.

According to a recent survey, 690 physicians in this country were in the government service; a certain number of these were

doing clinical work, but most were administrators. Looking at other categories, he was surprised to find that 144 physicians were doing administrative work in medical organizations (11 in the British Medical Association secretariat). In the hospital field, there was a great difference between the clinical and the administrative outlook. In Scotland, there was a general belief, which he shared, that a hospital should be administered by a physician.

In the general medical services of the country there is undoubtedly now much greater need for the medical administrator than in the past. Most of the 20,000 physicians running the general medical services had neither the time nor the inclination to look after all the "paper work" or to learn the answers to all the curious questions that were raised. In London and Middlesex it had been necessary to appoint full-time secretaries to the local medical committees; their primary job is to advise their colleagues, many of whom are excellent physicians and who yet sometimes show astonishing ignorance of the regulations. Another important part of their work is to maintain liaison with local health authority and hospital services. In other fields, as apart from the clinical work of the physician, are officials such as the secretaries of medical defense societies and members of the editorial staffs of medical journals.

Dr. Hutchinson concluded that it is essential for the medical administrator to have a sound clinical background. He should always be prepared to answer any question, even if only to refer the inquirer to some other source of information. Medical administrators must be careful to avoid any air of superiority, and they must have competent lay assistants, otherwise they will be bogged down by detail.

Recovery Homes.—Established as a half-way house between hospital and convalescent home for patients no longer in need of full hospital treatment but not ready for discharge, recovery homes can (1) secure a quicker turnover of beds in busy hospitals; (2) reduce hospital waiting lists; and (3) reduce maintenance costs per patient by up to two-thirds. They are receiving much attention from hospital authorities. The report of an inquiry made by King Edward's Hospital Fund says that all hospitals that have such homes are enthusiastic as to their value. Recent developments in antibiotics have made these homes increasingly important. With the risk of sepsis after operations almost eliminated, many patients no longer require full hospital facilities, although they may still be unfit to go to a convalescent home or to return home. In several cases, a converted country house was found to be the most suitable building for a recovery home. It remains under the supervision of the parent hospital. The average stay in the recovery homes survey was 13.4 days. The cost of treatment in a recovery home varies between 37 and 57% of the cost of a bed in a hospital. The cost of adapting a suitable country house is much less than that of building additional hospital wards.

New Mental Deficiency Hospital.—The Minister of Health laid the foundation stone of Greaves Hall, near Southport, in May. It is the first large hospital to be started in England and Wales since before the war, and it will be used for mentally defective patients. Its estimated cost is about $8,400,000, and it will provide beds for over 1,000 patients. The minister said that more than 2,500 new hospital beds for mentally defective patients are to be provided from centrally financed schemes in the next two years, but new building is not the only way in which it is hoped to improve the mental health services. The services provided by local health authorities for mentally defective persons living at home are of great importance and have increased greatly in the last few years. Although in recent years nursing recruitment has made great strides, the mental hospitals lagged behind the general advance and are still very short of nursing staff. It is not yet sufficiently well known that the whole atmosphere of the mental hospitals has been revolutionized by modern methods of care and treatment and that these branches of the nursing profession now offer a career with interesting work and excellent prospects.

Birthday Honors.—It is customary on the occasion of the Queen's official birthday for her to confer honors, and it is usual for physicians and others connected with medicine to be included in the list. Among those whose services have been recognized is Mr. Alfred Chester Beatty, who has received a knighthood. As an American who became a naturalized Briton, he has been a great benefactor to medicine. In 1937 he bought the old Freemason's Hospital in Fulham and presented it to the Royal Cancer Hospital to house the well-known Chester Beatty Research Institute. Mr. Somerset Maugham, the author, was admitted as a companion of honor. He qualified as a physician nearly 60 years ago. A baronetcy was conferred on Sir Russell Brain, the president of the Royal College of Physicians of London, and a knighthood on Mr. R. C. Brock, known throughout the world for his contributions to the surgery of the heart.

Shortage of Dental Students.—Dentists are so concerned by the small number of applicants for training in the dental schools that they have asked the Minister of Health to sponsor a national survey. It is maintained that, if recruitment continues at its present slow rate, there will not be enough dentists to provide a proper public service in about 10 years. At present, there are about 15,000 dentists on the register, but about 3,000 of these may not be practicing. It is suggested that a national committee seek out ways of inducing more young persons to take up dentistry. One main reason for the shortage is the fact that medicine attracts much the same type of student and that in most cases a medical career is first choice, since dentistry has not the same glamor and, in the minds of the public, a lower social standing.

Patients Referred by Dentists for Penicillin Injections.—The *British Medical Journal* says that the British Dental Association has sent the following letter to its branches and local dental committees: "The British Medical Association has told us that difficulties have arisen in parts of the country where some dental practitioners have referred patients to doctors for penicillin injections. The doctor is sometimes placed in an awkward position in dental cases of this kind if he decides that risks of sensitization and bacteriological resistance preclude the use of penicillin on a particular patient. The British Medical Association has accordingly asked that any dentist referring a patient to a doctor for this treatment should make his request to the doctor in writing and should not give any details to the patient."

Mobile Hospital Teams for Major Accidents.—The Ministry of Health has notified all local health authorities of arrangements that are being made for certain hospitals in all areas to be ready to send mobile medical teams to the scene of major civil accidents involving large numbers of casualties. It will be the function of the ambulance service to call on the most appropriate hospital. The ambulance service will be kept informed by hospitals of the number of beds remaining available for casualties. If it is necessary to call on more distant "support" hospitals, the hospital medical officer in charge of a mobile team will keep the ambulance service informed as to which of the hospitals should receive casualties. Mobile teams from hospitals will bring their own surgical and medical equipment.

FRANCE

A Dangerous Remedy.—At the hospital of Tours, M. Rauzand and J. Lutier treated a 31-year-old woman suffering from severe headache. On admission they found no abnormal meningeal or ocular signs. After several days a transitory amaurosis and a syncopal state developed, marked mental clouding occurred, the pulse rate dropped to 50, and Babinski's sign was seen on the left. The patient was transferred to the neurological service of Professor Guillaume in Paris. Ventriculography suggested a frontal lobe abscess. An exploratory operation revealed neither pus nor induration, but the cerebrum was edematous. On the following day it was learned that the patient had had a boil for which she had been given pills containing an organic stannous salt and vitamin F. She had taken 29 of these in six days. Many deaths have been reported in France in patients with syndromes suggesting acute encephalitis either from abscesses or from brain tumors and in whom the autopsy showed a cerebromeningeal edema. These patients had complained of severe headaches and mental clouding. Investigations by the board of health have shown that these patients were given pills containing the organic stannous salt. Inorganic stannous salts have been used for a long

time in treating boils without provoking intoxication. Many hypotheses are evoked concerning the toxicity of the organic iodic stannous salt (generally not toxic) used in the lethal preparation. According to one of these, the formation of stannous tetraethyl, in some cases, might be the cause of death.

Cancer of the Breast.—Considering the diversity of cancer of the breast and the necessity of varying the treatment according to the different types of tumor, P. F. Denol has studied records of 5,931 patients with cancer of the breast. He classifies cancer of the breast in the following groups: 1. A localized form of cancer found within the limits of the breast, originating without any invasion of the local lymph nodes—this may be the only form for which an operation can surely cure the disease, but even in this form, operation may result in metastasic generalization. This form develops through steps characterized by peritumoral edema, a definitely palpable tumor, and growth of the tumor. This type of tumor should not be operated on during its early development because this may result in the development of a more serious form. 2. A localized form extending beyond breast tissue—this spreads steadily and quickly but without invading the tributary lymph nodes. 3. A lymphatic form—this at the outset is accompanied by histologically demonstrable invasion of the local lymph nodes. 4. A diffuse form—this at the time of the first examination is found to have metastasized. The clinical manifestations of disseminated metastases may even occur before those of the initial tumor; for this form the treatment must be general instead of local. Cancers of the first three forms are of two kinds, those sensitive to androgens and those sensitive to estrogens.

Treatment of the Dangerous Alcoholic.—On April 15, 1954, the National Assembly passed a law in regard to the dangerous alcoholic. Any alcoholic dangerous to himself or others may be reported to the sanitary authority, which will investigate his family, professional, and social life and have him medically examined. If it is safe to release him he will be placed under the care of a social worker or a reliable antialcoholic society. If he cannot be released he may be summoned to appear before the civil court, which may send him to some center for the rehabilitation of alcoholics. In the next two years, some centers of this type are to be built. An alcoholic may be sent to such a center for six months. This may be extended for another six months if necessary. An alcoholic may, however, be released sooner with the approval of the chief physician of the center. The patient may ask to appear before the court to plead for his release. When he leaves the center he is kept on probation for one year under the care of a social worker. The patient who escapes from the preliminary medical examination is liable to a fine of 200 to 1,000 francs. In case of a relapse the alcoholic will be imprisoned for eight days. The same penalties are applicable to patients who leave the center without authorization. Special arrangements are provided for dangerous alcoholics suffering from mental disorders.

Cancer of the Esophagus.—In *Les échos de la médecine* of June 15, 1954, A. Morice of Caen reviewed the records of 50 patients with cancer of the esophagus, 30 of whom were heavy drinkers of cider brandy. The patients were seen so late in the course of the disease that only seven could be operated on. Two of these died within a few days after operation. Of the other five, only one was still alive; two died of delirium tremens, one of alcoholic coma, and one of hepatic cirrhosis.

TURKEY

Reticuloendothelial Histiocytosis.—In *Klinik* (vol. 11, no. 10) Dr. Ziya Tanan described two patients with acute malignant reticuloendothelial histiocytosis. For two months the first patient, a 30-year-old woman, had loss of appetite, a bitter taste, weakness, swelling and bleeding of gums, nausea, vomiting, and an intermittently elevated temperature. Examination on admission revealed an inorganic cardiac souffle, a slightly swollen abdomen, and a tender epigastrium. The temperature was 101.3 F, pulse rate 105 per minute, and blood pressure 140/80 mm. Hg. The erythrocyte count was one million per cubic millimeter, hemoglobin level 35% of normal, and leukocyte count 10,000 per cubic millimeter, with 74% histiocytes, 8% large monocytes, 6% lymphocytes, 5% monocytes, 4% polymorphonuclear neutrophils, and 3% plasmocytes. Although the sternal puncture did not reveal a myeloid reaction, it showed an abundance of histiocytes, megakaryocyte-like multiform nuclei, and giant phagocytes. The sedimentation rate was 40. The coagulation time was 5 minutes and the bleeding time 2.5 minutes. After 10 days the erythrocyte count was 600,000 per cubic millimeter, the hemoglobin level 30% of normal, and the leukocyte count 37,000 per cubic millimeter. The patient was given two blood transfusions of 500 cc. each, and after two days the erythrocyte count was 2,600,000 and the leukocyte count 25,000 per cubic millimeter. Intermittent fever continued. The patient was given liver extract, vitamins, and cardiac tonics. Her vomiting ceased, but her chest pain and feeling of faintness soon returned. After another 10 days the erythrocyte count was 1,200,000 per cubic millimeter, the hemoglobin level 30% of normal, and the leukocyte count 30,000 per cubic millimeter. The patient's condition deteriorated, and after two more blood transfusions she died, three months after the onset of the disease.

The second patient was a 50-year-old man who complained of weakness, pain in the back, swelling of the abdomen, intermittent chills, and fever. Examination revealed an enlarged liver. The spleen had descended below the umbilicus. He had cervical and inguinal lymphadenopathy. His temperature was 100.4 F, and his pulse rate was 100 per minute. His erythrocyte count was 3,100,000 per cubic millimeter, hemoglobin level 70% of normal, and leukocyte count 5,000 per cubic millimeter, with 58% histiocytes, 30% polymorphonuclear neutrophils, 6% monocytes, 5% lymphocytes, and 1% eosinophils. The splenogram did not show parasites, but there were 30 to 40 histiocyte-like giant phagocytes in every field. Sternal puncture revealed an absence of myeloid cells and the presence of an enormous number of destroyed cells. The sedimentation rate was 85, the coagulation time was 5 to 10 minutes, and the bleeding time was 1.5 minutes. Although the patient was given blood transfusions and palliatives, he died four months later.

Curettage Eliminates Chorioepithelioma.—In *Dirim* (vol. 29, no. 4) Dr. Tarik Maktav reported on the beneficial effect of curettage in a patient with chorioepithelioma. A 20-year-old woman was referred to the hospital because of imminent septic abortion. Her temperature was 102.9 F and her pulse rate was 120 per minute. After treatment the hemorrhage ceased and the patient was discharged. Curettage was performed later. As the material had the characteristics of retained products of conception, and as macroscopic examination did not show evidence of a hydatid mole, a histological examination was not performed. When follow-up revealed that slight bleeding continued and there were signs of anemia, the probability of a mole or chorioepithelioma was considered. Another curettage was performed, and the scrapings were sent to the Istanbul University Cancer Institute, where a diagnosis of chorioepithelioma was made. The patient, who had been discharged, reported that she was feeling fine, but she was readmitted two weeks later and another curettage was performed. This time the scrapings submitted to the Cancer Institute showed only endometrium, thus confirming the beneficial effect of curettage on chorioepithelioma that was the result of abortion.

Irradiation of the Nasopharynx.—In Turkey the Crowe sound was first used in 1947 by Dr. Arhan Toros of Istanbul, and he has used it in treating 105 of his patients with good results. In *Dirim* (vol. 26, no. 8) Prof. Nüzhet Atav and Dr. Emin Burad reported on their experience with irradiation therapy by the Crowe method in 50 children 10 to 15 years old who had lymphoid nasopharyngeal hypertrophy. The chance for audiometric improvement was better when the therapy was given in the early stages of the condition and with a larger dose. The therapy consisted of introducing 50 mg. of radium through a Monel metal tube for 12 minutes every two weeks. Each patient was given three such treatments. Audiometric amelioration was 56%, subjective amelioration was 65%, and general amelioration was 82%. Untoward side-effects were not observed.

CORRESPONDENCE

SOCIAL SECURITY FOR PHYSICIANS

To the Editor:—Permit me to extend my views on an article in the Washington News of the July 10, 1954, issue of THE JOURNAL.

The disciples of Oscar Ewing are again attempting to strangle the medical men of the nation. They could not get in the front door, so now they are trying to sneak in through the cellar door. The Socialist planners are the only ones, so they think, who know: (1) how you should live, and (2) earn your living, and (3) spend your money, and now even (4) save your money for your old age!

Social Security is neither social nor is it security. It is another form of income tax, and concealed behind its deceptive label is one of the most nauseating schemes forced down the throats of the American public. It has already enslaved millions of our people and is insidiously changing them into fawning vassals of the all-powerful State. Compulsory coverage, old age and survivors insurance is a brazen violation of the privacy of American citizens. It certainly smacks of a peculiar and somewhat naïve philosophy of life. Do its proponents think they are speaking to irresponsible teenagers who have yet to learn what sacrifice, hard work, self-denial, and thrift mean? Any person who has the intelligence and ability to earn a living and make his own way through life certainly possesses and can utilize that same wisdom in managing his own personal affairs.

At a very early age in life wise parents begin to teach their children to work hard while they are young and to save their money for their old age and for any emergencies, so that they can enjoy the fruits of their labor. Every self-respecting human does not relish the thought of having to go to the government with his hand out, waiting for the bureaucrats to dole out to him his own hard-earned money. Mrs. Hobby, according to THE JOURNAL, very strongly favors compulsory coverage for physicians and other self-employed—and I very strongly favor that the above lady "mind her own business and tend to her knittin'." My husband, who is a physician, and I are extremely capable of protecting ourselves for our old age and insuring our family without any help from the federal bureaucrats.

Here, indeed, is an issue with a vital challenge to all freedom-loving souls, and every physician worthy of the name should arise with righteous indignation to beat back this social security plan, which is nothing but a hideous subterfuge to force them and other self-employed to support or subsidize a bankrupt plan. Here, too, is where the Women's Auxiliary should play a tremendously vigorous part. After all, we are our husband's partners. May I urge the American Medical Association to continue its forthright and courageous stand to keep our men, and itself, free from any stranglehold by the government.

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APLASTIC ANEMIA AND CARBON TETRACHLORIDE

To the Editor:—THE JOURNAL (**155**:737 [June 19] 1954) published an article by Bernard Straus entitled "Aplastic Anemia Following Exposure to Carbon Tetrachloride." Without in any measure challenging the reliability of the clinical and laboratory findings presented, it becomes necessary to entertain reservations that carbon tetrachloride was the prime or sole causative agent. Of all industrial solvents, carbon tetrachloride more than any other has led to substantial reports as to toxic properties. Every degree of severity of involvement has been investigated, including mild functional disorders, acute nonfatal cases, rapidly fatal cases, and fatal cases with delayed symptoms. Autopsy appraisals have been frequent. The consensus of opinion is that expressed by Browning: "There appear to be no pathognomonic blood changes associated with carbon tetrachloride intoxication." However, Browning does mention one fatal anemia in a person who had acute dilatation of the stomach with heart failure, a secondary cause being "anemia haemolytic and dyshaemopoietic." One year prior to his death this person had undergone carbon tetrachloride exposure. When scores of investigators consistently deny the occurrence of any significant blood changes in any form of carbon tetrachloride poisoning, then it becomes extraordinary that three fatal cases with profound and somewhat similar signs and symptoms should fall within the services of one physician within a period of five years. In medicine, doubt of the extraordinary becomes a virtue.

Two observations become pertinent: (1) It does not appear that the author made any workplace investigation to establish with hoped-for exactness the substances or substance to which the two industrial workers were exposed. The implication is that the three patients indicated that they had been exposed to carbon tetrachloride and such statements led to a diagnostic finality. (2) It is well known to industrial toxicologists that carbon tetrachloride is often admixed with other solvents, such as benzene. Indeed, in one of Straus's case records the exposure was to a mixture of kerosene with carbon tetrachloride. Although kerosene, like carbon tetrachloride, is not known to induce pronounced blood alterations, in that instance there existed equal opportunity to have labeled the aplastic anemia as caused by kerosene. But is it not possible that the solvent mixture may also have included an aromatic hydrocarbon? Since there is much scientific evidence opposing them, I shall, until better informed, regard the author's conclusions on the cause in these cases as in need of support.

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To the Editor:—In the Clinical Notes of THE JOURNAL for June 19, 1954, page 737, Dr. Bernard Straus reports three cases of aplastic anemia that he attributes to exposure to carbon tetrachloride. His contention is startling to myself and others with whom I have corresponded since the publication of his article. If Dr. Straus is correct, then Hamilton, Haggard, Henderson, McCord, Kehoe, Princi, Ethel Browning of England, and many others of us in the field of occupational medicine have been most negligent investigators.

Out of a large series of patients of my own a great many were hospitalized for study. They received routine blood studies. In no instance was there any significant anemia. In addition to the usual effect on the central nervous system, the findings in those patients who had acute carbon tetrachloride intoxication revealed a fairly high frequency of renal involvement and, to a lesser extent, a hepatorenal syndrome. If death did not occur within a period of from few days to two or three weeks, eventual complete recovery took place.

Dr. Straus correctly intimates that there is a similarity of his cases to cases of intoxication by certain other chemicals, particularly benzol. Herein arises a question about his deductions that has occurred to those with whom I have corresponded. In each of the three instances he cites, the history given by the patient was apparently accepted as accurate. As far as I can read there has been no attempt to verify the history or to positively identify the alleged offending agent. In occupational medicine we have learned that this is a grievous error. We know that the patient's conception of the chemical nature of his exposure is very often erroneous. Very often it is necessary to go to the place of work, examine the environment, and analyze the chemical or chemicals involved. I could recite many examples in which, if this had not been done, a faulty assumption would have resulted.

Carbon tetrachloride is not a new or recently used industrial solvent. Its effect upon the human body has been studied for years and in many countries. If it had the property of producing profound anemia it would have been noted long before this by those intimately active in industrial toxicology. It is my studied opinion that either the cases cited by Dr. Straus were coincidental or the patients were exposed to an unsuspected

aromatic hydrocarbon. I can be wrong, but until a further investigation is done along this line I would ask that everyone adhere to the clinical entity of carbon tetrachloride intoxication as we have known it.

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SCHISTOSOMIASIS JAPONICA

To the Editor:—While Wolford and Rumball's recent article on schistosomiasis (*J. A. M. A.* **155:**1045 [July 17] 1954) served to illustrate one feature of the disease, it failed to include one of the most important facts about the case reported. That is, whether the disease was active. This problem should be a major concern of every physician who diagnoses or treats schistosomiasis. When one realizes that the drugs currently used for treatment are far from innocuous, the significance of activity becomes readily apparent, as this constitutes the only indication for therapy.

The detection of active infections in human beings rests, almost solely, on the recognition of *living* ova. A simple method has been reported (Newsome, J.: Recent Investigations into the Treatment of Schistosomiasis by Miracil D in Egypt, *Tr. Roy. Soc. Trop. Med. & Hyg.* **44:**611 [June] 1951) and should be used in every case. When the rectal biopsy specimen is obtained, it is placed in a small quantity of tap water for 30 minutes prior to microscopic examination. In this environment, live miracidia are stimulated to motion (a prerequisite to hatching, of course), and thus their viability can be attested. If the specimen is examined immediately after collection, motility is not apparent and the detection of live ova depends on the skill of the microscopist in recognizing flame cells within the shell of the ovum. Saline solution will inhibit hatching (Standen, O. D.: The Effects of Temperature, Light and Salinity upon the Hatching of the Ova of Schistosoma Mansoni, *Tr. Roy. Soc. Trop. Med. & Hyg.* **45:**225 [Oct.] 1951). Dead ova may be distinguished by their discoloration, but this requires some previous experience. Eventually some of these, entrapped by fibrosis, may be calcified. Those of us who see only an occasional case of schistosomiasis are inclined to be overly anxious to learn the result of biopsy and thus in haste tend to omit this most important step.

One erroneous statement in the report regarding the appearance of the infected rectal mucosa requires correction. In their summary the authors contend that while the mucosal appearance is not characteristic, it is not normal. This is contrary to personal observation, and Newsome has mentioned that perfectly normal appearing rectal mucosa (as seen through the proctoscope) may be found to contain both live and dead schistosome ova.

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To the Editor:—On page 1045 of THE JOURNAL of July 17, 1954, included in the report entitled "Schistosomiasis Japonica Untreated Ten Years After Exposure," there are two photomicrographs purporting to show "schistosomes" in rectal tissue and liver tissue obtained by biopsy. The structures to which reference is made are ova of schistosomes and not the schistosomes themselves.

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REVIEW OF BOOK ON ALLERGY

To the Editor:—I would like to call attention of JOURNAL readers to reviews of the book "The Allergic Child" other than the one published in THE JOURNAL (**155:**530 [May 29] 1954). I am asking this privilege because the review in THE JOURNAL was diametrically opposed to the majority of reviews, especially to those appearing in allergy journals. Two examples of these appear in the *Annals of Allergy* (**12:**232 [March-April] 1954) and the *Journal of Allergy* (**25:**384 [July] 1954).

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DE URINA

To the Editor:—On reading Dr. Smith's historical article, "De Urina" (*J. A. M. A.* **155:**899 [July 3] 1954), it occurred to me that you might be interested in a delightful and pointed reflection on the subject written by a 17th century commentator, Thomas Fuller. His book, "The Holy State and the Profane State," first published in 1642, contains a chapter, "The Good Physician," in which is found the following paragraph:

"He trusteth not the single witnesse of the water if better testimony be had. For reasons drawn from the urine alone are as brittle as the urinall. Sometimes the water runneth in such post-hast through the sick man's body, it can give no account of anything memorable in the passage, though the most judicious eye examine it. Yea, the sick man may be in the state of death, and yet life appear in his stale." (Fuller, T.: The Holy State and the Profane State, edited by M. G. Walten, New York, Columbia University Press, 1938, vol. 2, p. 53.)

Fuller, an ecclesiastic who wrote on a variety of subjects, seems to be among those who decried medieval uroscopy. Even in modern times we occasionally see infants and children suffering from genitourinary tract disease in whom a "most judicious" examination of the urine fails to reveal abnormalities consistent with the severity of the underlying lesions.

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MESENTERIAL LYMPHADENITIS CAUSED BY PASTEURELLA PSEUDOTUBERCULOSIS

To the Editor:—In two reports published in 1953 (*Deutsche med. Wchnschr.* **78:**532-535 [April 10] 1953; *Virchows Archiv für pathologische Anatomie* **323:**664-684, 1953), Masshoff described the frequent occurrence of a benign, abscess-forming mesenterial lymphadenitis in adolescents which, causing symptoms suggestive of those of acute appendicitis, often led to surgical intervention. At operation the presence of an abundant and clear peritoneal exudate was noted. Usually the appendix appeared normal, but enlarged lymph nodes were found to be present singly or in groups in the mesenterium, particularly in the ileocecal region. In a small number of cases signs of acute gastroenteritis dominated the clinical picture. Laboratory studies of the cause of this new syndrome gave the following results:

1. In 3 of the 15 cases in which the presence of the above described lymphadenitis had been proved histologically, Pasturella pseudotuberculosis could be isolated from operatively removed lymph nodes. 2. The serums of 14 of these patients agglutinated several P. pseudotuberculosis strains at titers ranging from 1:200 to 1:3,200. The blood of one of the bacteriologically positive patients was not available for serologic tests. 3. The serums of 220 persons, sent to this laboratory for Wassermann or Widal tests, failed to agglutinate pseudotuberculosis bacilli even at a titer of 1:10. The serums of 48 patients who had been recently operated on for appendicitis also proved negative. 4. The serums of 4 persons, sent in for the purpose of Widal tests, agglutinated pseudotuberculosis bacilli at titers ranging from 1:800 to 1:6,400. It was learned that these persons had been recently hospitalized, three of them with signs suggestive of appendicitis which, however, soon gave way to symptoms of gastroenteritis and the fourth on account of acute gastroenteritis.

The apparently frequent occurrence of benign pseudotuberculosis infection in man deserves the attention of clinicians and laboratory workers. A full report on the investigations summarized above will soon appear in *Deutsche medizinische Wochenschrift.*

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BUSINESS PRACTICE

THE YOUNG PHYSICIAN'S FINANCIAL FUTURE

Holgar J. Johnson, New York

The following article discusses the role of insurance in the planning of physicians' savings and investments.—ED.

Perhaps it is as great a tribute to the medical profession as any to say that the young intern about to go into private practice can look ahead with near certainty to a time schedule that would give pause to many—a time schedule that will all but preclude free time in which to become an investment expert. At the same time, this young man can expect a higher than average income and larger than average eventual funds, which will need placement. He also knows that he will have to do whatever is done for the future of his family and his own later years entirely by himself. As are most professional persons, he is completely dependent on his own efforts for every dollar of income; he realizes that there will be little or no continuing income in the event of disability or retirement, and over the years, as he is accumulating funds for his family's protection and his own later years, his needs for protection against financial vicissitudes are probably greater than those of persons in almost any other occupational group. Life insurance therefore becomes a matter of keen interest for physicians, young and old.

INSURANCE FOR DEBTS

At the outset of his professional career the physician has a greater need for life insurance protection than almost any of his contemporaries, if for no other reason than that physicians often carry an unusually heavy burden of debt when they start. This debt stems from the costly, prolonged education and training, the necessity for establishing well-located and sometimes expensive office quarters, the need to accumulate a large amount of equipment and supplies to meet modern practicing requirements, and the need for time to develop a full income from practice. Not many can do all this entirely from cash resources, and those who cannot, contract a debt that could become a great burden to the family, should the physician die before it is paid. Many a physician has drawn on life insurance even before the day of office opening, having secured his medical training through loans from life insurance policies or loans protected by policies. All families have a need for "clean-up" insurance; that is, life insurance set up for the distinct purpose of wiping out debts and outstanding bills, so that the family may pick up from there on its reorganized living. This is the first consideration in family protection. The average family might find $1,000 or $2,000 sufficient for this purpose, but many physicians would find several times such an amount necessary. A sound family program demands that all debts and outstanding bills be covered by life insurance, whatever their amount. If a physician has had to borrow to put up his shingle, buy his equipment on credit, purchase a home to house his new office, and stretch his credit to the utmost during those early days of pressure, his "clean-up" aggregate may well come to many thousands of dollars.

The young physician is likely to have to meet this greater need out of a relatively small income. It may be necessary for him to protect this portion of his needs through inexpensive term insurance, rather than a permanent plan. There is a warrantable basis for using term protection for this need, in that much of it is a short-term commitment that may not exist a few years later. Convertible term insurance policies can later be changed to permanent plans, as increasing income warrants. On the basis of term insurance the physician could probably insure against indebtedness, whatever its amount, for less than 1% annually of the sum total of debts. Permanent life insurance, which can be applied to other family needs as soon as the debt load has been removed, would require about two and one-half times the premium outlay for the term plan; this would still represent less than 2% annually of the debt total.

President, Institute of Life Insurance.

FAMILY PROTECTION AND INCOME

The young physician will have other insurance needs that depend in amount and nature on his family situation. More than likely he will be married, and he may have young children. The family protection program thus becomes a first consideration in his financial planning. This need does not conform to any rule of thumb; each family situation requires a custom-built plan that considers factors such as current income and scale of living, number of years of child dependency, time needed for adjustment to a new program, and the buying capacity of the head of the family. Families usually like to have at least one year's income at present levels assured, to give that much time to adjust to any new order of living that may be necessary. An income sufficient to keep the family together until the youngest child is old enough that the mother could safely seek employment is a second essential provision. After that, an income guarantee throughout the lifetime of the mother is desirable and can be added insofar as the physician can afford to purchase it.

It takes a sizable amount of life insurance to do all these things, but special plans that aid materially in expanding the coverage without a proportionate premium increase are available; for instance, the family income plan can provide an income of $10 per month for each $1,000 of life insurance, to be continued for 10, 15, or 20 years from date of purchase, after which the full face amount of the policy is paid to the widow. Thus, a physician whose youngest child is 3 and who wishes to ensure an income of $250 per month until that child is 18 might set up such a plan under a $25,000 policy; this would cost about 25% more than a straight $25,000 policy. The plan would provide $250 monthly for the widow until 15 years from date of purchase and then pay the full $25,000 to her, either in cash or in continued income. The details of a family income plan are worked out by the physician and his life insurance agent. The most satisfactory procedure is for them to draw up a schedule of what is desired and another of the maximum the young physician could put into such protection and then to bring the two figures together. Usually some cutting in the desired program is necessary, but no one other than the physician himself can decide which item is to be trimmed and which left intact. There is a distinct advantage in planning the full desired program initially, as this may be followed over the years as income increases; since physicians are apt to move fairly rapidly into a higher income bracket once their practice is established, additions of further portions of the program may take place at shortening intervals.

Educational Guarantees for Children.—Another item in the protection program that many physicians are interested in is the setting up of educational guarantees for their children. Because of his own long and expensive educational requirements, the physician is more apt to recognize the value of planning ahead for education than many persons. Perhaps he saw some of his classmates leave school because of financial pressures that followed a parent's death. Whatever the background, the interest is there. An educational guarantee can be included in the family program at a small additional cost. Some companies issue special educational policies that provide a monthly payment for the 10 months of each of the four college years, with an additional amount payable at the start of each school term. If a medical education is in prospect this would have to be amplified to cover the required postgraduate studies. Under most of these plans the payments are made if the parent does not live to make them; it is possible to obtain policies that will

provide the college funds whether the policyholder lives or dies, though on that basis the premium would be larger, as it would have to guarantee the full amount of benefits on an endowment basis.

RETIREMENT

An important consideration in any physician's financial planning is the creation of a satisfactory retirement program for himself. This cannot be done until the family plan is under way, but it should be started as soon as possible if minimal cost is to be secured. The physician may well be able to carry on his practice far beyond the usual retirement age; in fact, he may have to make special efforts to check further addition of patients in those later years—but he is also fully conscious of the almost universal need to be able at least to lighten his duties then, if not to retire from all practice. The basis of all saving and investment is the accumulation of funds for the needs of family protection and retirement. Hence, life insurance becomes a basic part of the savings and investment programs—activities for which the physician has little time, especially in the early days of his practice. Even term insurance becomes a part of the investment planning, in effect, though there is almost no investment element in the policy itself. Life insurance has special advantages in that it calls for regular, periodic payment and affords no opportunity to fall behind in investment planning for lack of time. It also minimizes the investment problems for the family, should the physician die. A retirement program requires relatively large blocks of investment funds, and life insurance can be an invaluable aid in setting up the guarantee for those later years.

When considering insurance or annuity plans for retirement, it is well to remember that the basic family life insurance policies all have cash values that will have grown to a large sum by retirement age. This cash value can be used to provide retirement income for the policyholder himself if the protection need for which it was bought no longer exists. Straight life insurance policies taken out between ages 25 and 35 have a cash value at age 65 of about 60% of the face amount of the policy; if the policyholder has a $25,000 straight life policy, taken out at age 30, the age 65 cash value would be near $15,000. Specific provisions for retirement income can be made with a wide range of contracts. There are straight annuities, some of which can be bought on the single premium basis, some on the annual premium basis; cash refund annuities, which guarantee the return of at least as much as was paid in, although for this extra guarantee the monthly retirement income is somewhat smaller; and policies that combine the retirement feature with life insurance protection, giving a specified amount of protection up to age 55, 60, or 65 and then an income, usually $10 monthly per $1,000 of policy, for life. The last type of policy has always been popular with physicians, as it channels many of the investment problems of retirement into one simple insurance plan. Although such a plan may not have as big an earning rate as some types of investment, it is guaranteed and safe and takes no time away from the practice for management.

In all retirement plans it is well for the policyholder to consider the joint needs of both himself and his wife at retirement age. All too often a retirement plan is set up for only the policyholder himself, without provision for income for his wife after he dies. A joint and survivor policy or clause would provide income for as long as either lived—at a higher cost, because it is in effect a double annuity. The young physician may not be ready to undertake this portion of his life insurance program at the outset. The funds for clearing up debts and bills and the provisions for family maintenance are the first requirements, but as soon as the practice warrants, the young physician may wish to revise his program to include the retirement plan.

TAX PROBLEMS

Another important consideration in the physician's protection program, as his income moves up to significant levels, is the matter of estate shrinkage. The young physician, perhaps still struggling to establish his practice, probably feels he is far from being an estate owner, but under today's heavy tax load the definition of an estate for tax purposes becomes a reality early in a career. Especially is this so for persons like physicians who are operating on a high level of expenses, ownership, and income. Take the case of a young physician who owns his office-home, who has set up an adequate life insurance program, and who has acquired some basic personal property. Federal estate tax exemption is set at $60,000, and with all items of ownership combined the community property provisions raise the effective exemption to $120,000 for a married man. With a home worth perhaps $30,000 to $50,000 and life insurance totaling an even larger amount, he may enter the estate tax bracket at an early date. State inheritance taxes often apply to even lower amounts. In addition to all this, income taxes must be paid currently on this independent operator's income. All of these taxes must be met before any of the other items of family protection can be covered, even if it means a sacrifice sale of property; hence, it is important that the physician at all times keep in mind the growing hazard of estate shrinkage. He may cover this with a special life insurance policy, keeping the family program intact as planned. Life insurance is better than almost any other medium for making funds available for tax purposes, as it gives the executor immediate cash and obviates any possibility of having to sell part of the estate to meet taxes.

CHANGING NEEDS

The most effective procedure in life insurance planning is for the physician to select a life insurance agent in whom he has confidence and then put the family financial "case" into his hands just as completely and on just as confidential a basis as do the patients who bring their health problems to him. A base program can then be drawn up and an objective plan prepared, and through periodic rechecks the physician can amplify his program to include more and more of the general objective as increasing income permits. This periodic check-up is an important part of any life insurance plan. Every policyholder should have his program reviewed carefully by his agent every year, if possible—certainly every second year. In the earlier years of practice, when changes in basic family situations develop rapidly, the check-up should be made as frequently as possible. This does not mean that the policyholder should wait until a calendar date to report a change or seek information about meeting one; the purpose of the check-up is to make certain that no change has developed that has not been adequately covered in the plan.

Change is one of the great certainties in life. This is true of our whole way of life, of our country, of our economy, and of our family and individual life. Often these changes affect other parts of our life plans. Increased income, widened family responsibilities, change of location, revisions in the tax program —those are just a few of the many factors that call for changes in the life insurance program. Even if no such changes have developed since the last program check by the policyholder and his agent, there may be a great advantage in seeing if time has shifted the viewpoint somewhat, perhaps making some variation in the program details or some addition to the insurance desirable. It is important that the life insurance program be kept up-to-date at all times. The physician, whether young or old, should be careful to have these repeated check-ups made. They cost the policyholder nothing, and they may prove highly profitable to the ultimate beneficiaries. Life insurance, savings, investments, and property of any kind all combine to make up the financial planning of the family; even the leading security analysts place life insurance as the primary item for consideration of the family when establishing its financial plan.

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MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Pulseless Disease. A. Jervell. Am. Heart J. **47:**780-784 (May) 1954 [St. Louis].

A case of pulseless disease is reported in a woman, who at the onset of the disease was 30 years old. Her first symptoms were pain in the chest and breathlessness on effort. The chronic vascular disease attacked the patient's vessels that arise from the aortic arch and led to a pronounced narrowing of these vessels. This resulted in loss of pulsation in the arteries of the upper extremities with symptoms of ischemia in the right hand and reduction of pulsation in carotid arteries on both sides, with symptoms of cerebral ischemia. In addition, signs of aortic incompetence were observed and possibly of aortic stenosis. The patient had general symptoms and most strikingly a greatly raised sedimentation rate. During the patient's many stays in the hospital, she received several courses of penicillin in large doses. She was also treated with chlortetracycline (Aureomycin), corticotropin (ACTH), cortisone, and lastly she was given local roentgen ray treatment for pronounced soreness over the neck vessels. None of these treatments had any definite effect.

Arterial Hypertension Treated with Rauwolfia Serpentina and Veratrum Viride. C. Joiner and R. Kauntze. Lancet **1:**1097-1099 (May 29) 1954 [London, England].

Joiner and Kauntze analyze the results of a clinical trial of Rauwolfia serpentina in 24 severely hypertensive patients under treatment with Veratrum viride. All patients were given alkavervir (Veriloid) 1 mg. per 10 lb. (4,536 gm.) of body weight in three divided doses daily for a preliminary fortnight and throughout the trial. For eight weeks 12 patients (group A) received placebo tablets, and then for the next eight weeks the active substance, 0.5 gm. nightly. The remaining 12 patients (group B) were given a preparation of Rauwolfia serpentina, 0.5 gm. each night for eight weeks and 1 gm. nightly for a further eight weeks. The patients were allocated to one or the other group at random. One of the 24 patients died from malignant hypertension with uremia, and 2 were admitted to the hospital with left ventricular failure. One defaulted before the observations were complete, and 2 others were obtaining drugs from other sources. One other patient's readings proved so variable as to be unreliable; in yet another such severe pruritus developed that the administration of Rauwolfia serpentina had to be stopped. Bradycardia was shown in 6 of the remaining 16 patients. Lowered diastolic pressures were demonstrated in six. The object was to assess the additive or synergistic effect of Rauwolfia serpentina and not its single action. The results so obtained refer only to a small group of patients, and generalization is unjustifiable; yet this group represents the main problem in treatment, the severe or moderately severe, progressive hypertension, in which effective oral therapy is particularly desirable. Rauwolfia serpentina in a dosage of 0.5 gm. daily induced bradycardia and lowered the diastolic blood pressure in certain hypertensive patients already under treatment with Veratrum viride, but there was no evidence of a striking additive or synergistic action.

The place of publication of the periodicals appears in brackets preceding each abstract.

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Electrocardiographic Changes Simulating Recent Myocardial Infarction. J. A. Segal. Connecticut M. J. **18:**493-499 (June) 1954 [New Haven, Conn.].

There are puzzling cases in which the symptoms appear to be those of recent myocardial infarction and the electrocardiographic findings are indicative of such disease, but which at autopsy reveal patent coronary vessels and no evidence of recent myocardial infarction. Because of recent experience with two cases, Segal reviewed the literature and found that others had had similar experiences. The first of his patients, a man aged 65, experienced severe pain in the upper abdominal region. His serum amylase was over 1,100 units and he had board-like rigidity in the upper part of his abdomen. The serial electrocardiograms revealed abnormal Q waves, S T elevations and depressions with T wave inversions consistent with a diagnosis of recent myocardial infarction. Autopsy showed that the Q waves were due to an old myocardial infarction and the S T and T wave changes were due to a circumscribed area of acute fibrinous pericarditis. Death was due to acute hemorrhagic pancreatitis. The second patient, aged 80, was at first thought to have acute appendicitis. His appendix was removed. Some days later pain in the right upper quadrant developed that suggested acute cholecystitis. He was operated on for this, and gall stones were found. During the acute distress in the upper part of the abdomen there existed electrocardiographic changes consistent with a diagnosis of recent myocardial infarction. He later died because of a bleeding duodenal ulcer. Autopsy revealed no abnormal cardiac findings. These two cases demonstrate that in acute diseases of the upper abdominal region the electrocardiogram may show changes that simulate recent myocardial infarction.

Thrombosis of the Portal Vein Demonstrated by Means of Percutaneous Splenic Venography. H. J. J. Fesevur and J. R. von Ronnen. Nederl. tijdschr. geneesk. **98:**1502-1505 (May 29) 1954 (In Dutch) [Amsterdam, Netherlands].

The case reported not only demonstrates the misleading symptoms that may be caused by hypernephroma but also shows the valuable information that can be provided about the splenoportal circulation by splenophlebography. In this method of examination, a water-soluble contrast medium is introduced into the spleen and an informative roentgenogram is obtained of the splenic veins and of the portal vein. The observations obtained in the course of the several exposures following introduction of the contrast medium are described and discussed. The patient at first seemed to have hepatic cirrhosis, later splenic venography revealed thrombosis of the portal vein, and finally with the aid of intravenous pyelography the real cause of the disorder was proved to be a tumor of the right kidney. The authors emphasize the fact that carcinoma of the kidney may be present under a wide variety of symptoms, which frequently lead to an incorrect diagnosis.

The After-History of Pulmonary Tuberculosis. II. Thoracoplasty: Ten-Year Follow-Up. R. Douglass and E. B. Bosworth. Am. Rev. Tuberc. **69:**930-939 (June) 1954 [New York].

The authors report on 238 patients with pulmonary tuberculosis who were subjected to thoracoplasty. Two hundred five of these had active parenchymal disease for which they were operated on between 1937 and 1947 and were followed through 1950. In 70% of the 205 patients the disease was arrested at the end of 10 years' follow-up. Arrest of the disease occurred for the most part by the second anniversary of the thoracoplasty and the incidence of arrests showed little change thereafter. Relapses occurred throughout the 10 year period. The outlook was poor in the absence of resection. Deaths occurred at an almost uniform rate after the initial postoperative period, in the course of which one-sixth of the deaths occurred. Approximately one-tenth of the later deaths were due to cor pulmonale.

In an additional group of 33 patients with pleural lesions, thoracoplasty was performed because of inexpansible lung in 12, tuberculous empyema in 15, nontuberculous empyema in 3, and mixed empyema in 3. There were no deaths due to tuberculosis, and one patient had exacerbation of contralateral parenchymal disease. Two patients in this group died of cor pulmonale.

Tuberculous Peritonitis. P. K. Chatterjee. J. Indian M. A. **23:**317-324 (May) 1954 (In English) [Calcutta, India].

The author reports on 52 patients with tuberculous peritonitis. There were 24 males and 28 females. The high incidence of tuberculous peritonitis (54%) in the female patients is significant. Most of the female patients were married and in the reproductive age. The age incidence of tuberculous peritonitis conformed to the general pattern of tuberculosis morbidity in various age groups, with the highest incidence between 21 and 30 years of age. The most frequent symptoms were fever (40 patients), wasting (30 patients), and abdominal pain (29 patients). The most characteristic sign in 36 patients (69.2%) was the presence of lumps in the abdomen. The lumps were either discrete and well defined (suggesting enlarged mesenteric lymph nodes) or vague, irregular, and ill-defined masses that suggested matted mesentery and intestinal coils. Active tuberculous lesions in the lungs and pleura were observed in 21 patients. Direct spread through ingestion sputum may have occurred in 17 patients with active tuberculous lesions in the lungs. The high incidence of widespread lymph node involvement suggested that in many patients peritonitis was the result of a progressive postprimary disease due to hematogenous dissemination. Presence of free fluid, abdominal pain, and lumps or masses, particularly around the umbilicus, were considered characteristic and offered aid in diagnosis. When these were associated with fever, anemia, and wasting, diagnosis was highly probable. Presence of pulmonary tuberculous lesions or involvement of lymph nodes made the diagnosis almost certain. Roentgen examination of the intestinal tract after a barium meal was of considerable help in differential diagnosis from ileocecal tuberculosis or regional ileitis. Immediate results of treatment are reported in 30 of the 52 patients; 16 of the 30 patients were given 1 gm. of streptomycin in two injections daily for one to two months. Fourteen patients were given 1 gm. of streptomycin and 10 to 12 gm. of *p*-aminosalicylic acid daily for six weeks to four and a half months. Temperature was promptly controlled. Relief of abdominal pain and diarrhea and improvement in appetite were also promptly effected. Patients gained weight rapidly. Effect on abdominal masses was striking and even large masses were observed to resolve completely. Absorption of peritoneal fluid also occurred. In patients with large ascites, improvement did not occurr so rapidly, and in some paracentesis had to be used. Twenty-one (70%) of the 30 patients showed considerable improvement, and an additional 5 patients (16.7%) showed improvement but were not completely free from all signs and symptoms. Eighteen of the 52 patients were followed for 12 to 18 months; of these 18 patients, 10 clinically showed arrest of the disease and 4 had a recurrence of the abdominal condition within 3 to 12 months. One patient died after 18 months, and another still has some signs and symptoms at the end of the 11th month. Arrest of the disease may be obtained in most patients, provided they are not in an advanced stage with extensive pulmonary disease, by a course of specific treatment with streptomycin and *p*-aminosalicylic acid for four to six weeks, combined with rest in bed and general treatment followed by adequate aftercare and treatment of pulmonary or other lesions. Although streptomycin alone gives satisfactory results, it is preferable to combine it with *p*-aminosalicylic acid because of the risk of streptomycin resistance.

Epidemic Hemorrhagic Fever. E. DeCoursey. Wisconsin M. J. **53:**325-328 (June) 1954 [Madison, Wis.].

Epidemic hemorrhagic fever was practically unknown to western medicine before 1951, when outbreaks occurred in United Nations troops in Korea; but by the summer of 1953 there had been approximately 2,000 cases among United States forces, with about 120 deaths. The disease is often referred to as EHF. The cause of epidemic hemorrhagic fever is uncertain. Some evidence implicates a filterable virus as the causative agent, a trombiculid mite as the vector, and a rodent as the reservoir. The basic pathological change is increased vascular permeability with edema, serous transudate, and hemorrhages. The kidneys, pituitary, adrenals, heart, and gastrointestinal tract are principally involved. Medullary hemorrhages and necroses give a characteristic renal picture, "the EHF kidney." Mononuclear infiltrations appear in the heart, spleen, and lymph nodes. Epidemic hemorrhagic fever is characterized by the sudden onset of a mild to severe influenza-like syndrome that progresses through febrile, hypotensive, oliguric, diuretic, and convalescent phases. The diagnosis is entertained in a febrile patient who has recently been in Korea and who shows hematopoietic, renal, and cardiovascular involvement. Combined urinary and hematological laboratory findings are strongly suggestive, and proteinuria is necessary for confirmation of the diagnosis.

Treatment of Chronic Pulmonary Emphysema. M. S. Segal, A. Salomon and J. A. Herschfus. Am. Rev. Tuberc. **69:**915-929 (June) 1954 [New York].

Correlation of certain phases of management of the patient with chronic pulmonary emphysema with the knowledge of its physiopathology was attempted. A decreased vital capacity, a small inspiratory capacity, an enlarged functional residual capacity and residual volume, a slight increase of the timed vital capacity, a significantly increased ratio of the residual volume to the total lung capacity, and a seriously disturbed ventilation were the basic defects demonstrated by pulmonary function studies in the patient with chronic emphysema. Continuous preventive measures to control and improve these abnormal findings should be employed. The experiences of the authors with several therapeutic measures in the treatment of chronic pulmonary emphysema and complicating manifestations were described, namely, antihistaminic preparations, such as a solution of diphenhydramine, ammonium chloride, sodium citrate, chloroform, and menthol (Benylin expectorant) or tripelennamine (Pyribenzamine expectorant) hydrochloride; aminophylline; expectorant mixtures; antibiotics such as penicillin, streptomycin, or oxytetracycline (Terramycin); aerosols of bronchodilators; water or preferably a nontoxic proprietary detergent (Alevaire) used as humidifiers; enzyme aerosols such as pancreatic desoxyribonuclease (Pancreatic Dornase); corticotropin and cortisone; the use of venesection, digitalis, and the mercurials. The general principles were outlined for the use of oxygen, intermittent positive pressure breathing in inspiration, and continuous aerosol therapy. The combined use of bronchodilator aerosols with intermittent positive pressure breathing in inspiration was described for the routine treatment of chronic pulmonary emphysema. The use of alternating positive-negative pressure breathing (exsufflation) proved of considerable value for the evacuation of bronchial secretions when other therapeutic agents failed. The hazard of the carbon dioxide intoxication syndrome and respiratory acidosis is always present in patients with chronic hypoxia secondary to chronic pulmonary emphysema or chronic pulmonary heart disease, particularly if respiratory-depressing drugs are administered preceding or along with the administration of high concentrations of oxygen. The prevention and management of respiratory acidosis was discussed. The principal indications and the use of breathing exercises, pneumoperitoneum therapy, and various forms of mechanical respiration were presented.

Cortisone and Combined Antibiotic Therapy of Acute Brucellosis Melitensis. G. B. Magill, J. H. Killough and S. I. Said. Am. J. Med. **16:**810-817 (June) 1954 [New York].

Cortisone was given to 48 patients with acute brucellosis, 46 of whom had not received previous therapy, and 2 had relapsed from short courses of a single antibiotic. Blood cultures were positive for Brucella melitensis in 43 (90%). All 48 patients received oxytetracycline (Terramycin) at four hour intervals in daily doses of 3 gm. for the first week and 1.5 gm. for the subsequent two weeks. In addition to oxytetracycline, dihydrostreptomycin was administered intramuscularly in daily doses of 1 gm. for the entire three week period. Twenty-four patients were given a total dose of 0.4 to 1 gm. of cortisone during the first three to seven days of antibiotic therapy only. Twenty-two of these received 0.3 gm. of cortisone on the first day, 0.2 gm. on the second, and 0.1 gm. on subsequent days. The other two

patients received 0.1 gm. of cortisone daily. The second group of 24 patients received the hormone during the entire three week period of treatment with antibiotics; cortisone was administered at 12 hour intervals and the daily dose consisted of 0.1 gm. the first week and 0.05 gm. the second and third weeks, with a total dose of 1.4 gm. Twenty-two patients with brucellosis who had been treated with oxytetracycline (Terramycin) and streptomycin for three weeks were used as controls. Clinical response to the combined hormone-antibiotic therapy was rapid and at times dramatic. Patients became afebrile within an average of 22 hours after institution of the treatment as compared to 4.6 days in the control group who did not receive cortisone. Herxheimer-like exacerbations of fever or symptoms occurred in 8 (17%) of the 48 patients, as compared to their occurrence in 12 (55%) of the 22 control patients. Although relapse rates appeared to be higher in patients receiving cortisone for one to three weeks (5 [29%] of 17 patients and 8 [33%] of 24 patients) than in those who received cortisone for only four days or not at all (4 [18%] of 22 patients or 1 [14%] of 7 patients), the differences were not statistically significant. Brucella agglutination titers appeared to be depressed by the cortisone therapy. Occasional major side-effects of cortisone therapy (manic psychosis in a 50-year-old woman; the occurrence of a cavity in a previously noted, limited area of pulmonary infiltration; moderate gynecomastia in an 18-year-old boy; and generalized anasarca in a 40-year-old man with cor pulmonale) militate against its general use in brucellosis. The possible effects of lowering host resistance or causing more frequent relapses weigh against the use of cortisone alone or for long periods even with antibiotic therapy. Its dramatic effect in alleviating toxemia, however, makes the discriminate use of cortisone a helpful adjunct during the first four or five days of specific antibiotic therapy of acute brucellosis.

SURGERY

Cor Triatriatum: A Rare Malformation of the Heart, Probably Amenable to Surgery; Report of a Case, with Review of Literature. A. Pedersen and F. Therkelsen. Am. Heart J. **47:**676-691 (May) 1954 [St. Louis].

Cor triatriatum, a rare congenital malformation of the heart, in which a transverse septum stretches across the left atrium, separating the opening of the pulmonary veins from the mitral orifice, is reported in a 29-year-old woman. The patient had a history of increasing cardiac distress. No murmur could be heard. The heart was not enlarged, but a prominent second left arch and pulmonary congestion were observed in the roentgenogram. The lower lobe of the left lung was pronouncedly emphysematous. An electrocardiogram showed right ventricular hypertrophy. On heart catheterization, an excessive pulmonary hypertension was found, and the pulmonary "capillary pressure," too, was high. A mitral disease, therefore, was suggested, and the patient submitted to surgical intervention. Thoracotomy revealed a normal mitral valve, and a normal pressure in the left atrium was measured directly. Postoperatively, the patient had increasing dyspnea and cyanosis and died on the ninth day after surgery. Necropsy revealed a transverse septum with only one small perforation separating the opening of the pulmonary veins from the rest of the atrium. Reports of 62 cases of anomalous cords or septums within the left atrium were collected from the literature. Thin cords or even broad bands across the lumen were of no significance. The real cor triatriatum, however, was a serious disorder. Many of the patients died shortly after birth, and only a few reached the adult age. The clinical symptoms and signs were not characteristic, and diagnostic help was not obtained from the usually employed investigations, such as auscultation, electrocardiography, and roentgenography. An in vivo diagnosis, therefore, must be left for an exploratory thoracotomy. Regarding the possibility of a successful surgical interference, this disorder, even if rare, should be taken into consideration in obscure cases of pulmonary hypertension, especially when a high "pulmonary capillary pressure" has been measured. After cardiotomy, a direct digital exploration of the anomalous structure would afford the necessary details. It should be kept in mind that with the usually employed approach through the auricular appendage the exploring finger will enter in front of the diaphragm and directly on the normal mitral valve, as actually happened in the authors' case. As the diaphragm was often funnel shaped in the direction of the blood stream, the way of entrance through a pulmonary vein should possibly be preferred in such case. The splitting of the anomalous structure by finger fracture or by cutting instruments should be made as complete as possible, as there is here no valvular function to preserve.

Surgical Diseases of the Pulmonary Artery: Central Aneurysms, Arteriovenous Fistulas, and Peripheral Aneurysms. D. H. Watkins and F. R. Harper. Am. Surgeon **20:**602-618 (June) 1954 [Atlanta, Ga.].

Two cases of central aneurysm of the pulmonary artery are reported in a 47-year-old man and in a 64-year-old man, respectively. It was possible to mobilize the aneurysm in the younger man and wrap it with a strip of reactive cellophane. The aneurysm in the other patient was so large and so adherent to the surrounding structures that any definite therapy was impossible. The production of a benign bronchial stricture by external pressure of the aneurysm with resulting chronic obstructive pneumonitis was noted. Central aneurysms of the pulmonary artery are uncommon lesions. They produce death by heart failure and less commonly by rupture. From the standpoint of differential diagnosis they must be distinguished from mediastinal nonvascular masses. Recognition of associated cardiac lesions is important. The occurrence of pulmonary arteriovenous fistulas is reported in two men aged 42 and 64 years. A lobectomy of the left lower lobe was done in the younger man who had multiple pulmonary arteriovenous fistulas associated with other manifestations of hereditary hemorrhagic telangiectasis (Osler's disease). Half of the cases of arteriovenous fistula show evidence of Osler's disease. Roentgenographic examination of the other patient showed a coarsely lobulated mass measuring about 4 cm. in diameter in the right midlung field intimately associated with large vessels coursing downwards from the right hilum. The impression from this examination was an arteriovenous aneurysm in the right midlung field and moderately bilateral emphysema; this impression was confirmed by angiocardiography. Surgical intervention was not performed because of the patient's age and emphysema. Pulmonary arteriovenous fistulas are commoner than central aneurysms and must be distinguished from round, parenchymal pulmonary lesions. A significant incidence of serious or even fatal complications in untreated patients (hemoptysis, hemothorax, bacterial endocarditis, brain abscess, thrombosis associated with polycythemia) leads the authors to recommend surgical measures except in patients of advanced age, in those seriously ill of unrelated disease, and in those who have widely distributed lesions. Surgical resection should be only as extensive as necessary to extirpate the lesion. Simple ligation of the supplying vessels is not recommended because of numerous collateral vessels. Simple aneurysms of the peripheral branches of the pulmonary artery are rare lesions. The most frequent starting point is ulcerative endocarditis. Operation is usually impossible because of the severity of the underlying disease.

NEUROLOGY & PSYCHIATRY

Intellectual and Affective Changes in Essential Hypertension. R. M. Reitan. Am. J. Psychiat. **110:**817-824 (May) 1954 [Baltimore].

The Rorschach test was administered to patients with neurosis, with organic brain damage, and with essential hypertension. Intergroup statistical comparisons were made of the mean values on each of the Rorschach variables. The relative frequencies of Rorschach "signs" or organic cerebral damage in the three groups were compared using the chi-square technique. The results indicate that the mean scores of the hypertensive group consistently fall between those of the other two groups. A review of the protocols in the three groups indicates a considerable amount of neurotic symptomatology in each group, but confirms the quantitative results that indicated intellectual impairment caused by organic brain damage in some of the patients with essential hypertension.

Initial Masking of Organic Brain Changes by Psychic Symptoms: Clinical and Electroencephalographic Studies. R. W. Waggoner and B. K. Bagchi. Am. J. Psychiat. **110:**904-910 (June) 1954 [Baltimore].

Waggoner and Bagchi emphasize that brain tumors may exist in patients whose symptoms are primarily mental. The psychiatrist should be "brain-tumor conscious," because if the patients who do have brain tumors were recognized sufficiently early unnecessary or prolonged therapeutic procedures or custodial care could be avoided and the way cleared for early surgical treatment. Certainly the presence of a brain tumor should be recognized before the use of potentially dangerous therapeutic procedures, such as electroshock. It is not only difficult to recognize the presence of a brain tumor, but its localization also is difficult in the presence of mental symptoms. Hence any procedure that will enable the psychiatrist or neurologist to make an earlier diagnosis of a focal lesion should be utilized, particularly if this procedure does not involve any risk or cause any pain to the patient. The authors present here six patients in whom the electroencephalogram was of particular help in early diagnosis. In all, the diagnosis of a focal lesion was either positively indicated or suggested by this procedure. The authors believe that if a routine electroencephalographic study were done on all patients admitted to state hospitals, an indication of focal lesion might be found in many. In such patients, a localizing study should be carried out. In this way, it is entirely possible that a considerable number of brain tumors would be recognized early. Even if only a small percentage of mental hospital patients were found to have brain tumors and some of these were relieved by operation, the time and expense of the electroencephalographic examination would be an excellent investment.

The Specificity of the Complement Fixation Test in Poliomyelitis. F. L. Black and J. L. Melnick. Yale J. Biol. & Med. **26:**385-393 (April) 1954 [New Haven, Conn.].

Black and Melnick point out that infection with poliomyelitis virus gives rise to complement-fixing antibodies that may be detected with antigens prepared either from the brains of infected mice or from tissue culture fluids. Previous investigators (Casals, Svedmyr) used sufficient antigen in each test to obtain maximum sensitivity. With this antigen concentration the presence of antibody could generally be detected within the first week after onset of the disease, but the serums usually gave similar complement-fixing titers against antigens of the three types of poliomyelitis virus regardless of the type involved in the infection. The authors describe a complement fixation test for poliomyelitis that uses minimal quantities of complement and antigen. They employed it in two types of investigations: serodiagnosis of infection and antibody response to vaccination. Tests for complement antibodies for three types of virus were made on specimens obtained from 49 poliomyelitis patients. A homotypic complement-fixing titer rise was found in 90% of the patients from whom virus was isolated, and a heterotypic rise in 10%. Serums from 30 children were tested for complement-fixing antibodies before and after inoculation with 40% formaldehyde solution (Formalin) inactivated type 1 virus. Eighteen of these children showed a postinoculation increase in type 1, 2, or 3 antibodies. Some showed complement-fixing responses to antibodies of more than one type. Nearly all of the increases occurred in persons who possessed preinoculation neutralizing antibodies.

GYNECOLOGY & OBSTETRICS

Endometriosis of Navel. J. M. Mainetti and J. A. Triaca. Sem. méd. **61:**540-546 (May 6) 1954 (In Spanish) [Buenos Aires, Argentina].

A married woman 35 years old complained of painful menstruation. She also complained about moderate dyspareunia and pelvic pain before and during menstruation. Her only child is a normal child 5 years old, who was born by cesarean section. The patient had a nodular purple tumor of the navel, which increased in size during menstruation, was painful before and during menstruation, and painless in the intermenstrual period. After the cesarean section, pain became more acute and diffuse, the tumor increased in size and became ulcerated, and a menstrual fistula, which bleeds during menstruation, opened. The diagnosis was based on the symptoms and the character of the pain and of the tumor. It was confirmed by histological study of the removed tumor. The operation consisted of omphalectomy, laparotomy in search of further foci of endometriosis in the internal genital organs and in the peritoneal cavity, right adnexectomy, left salpyngectomy, and almost total resection of the left ovary to remove left tubo-ovarian endometriosis. The scar of the previous cesarean section was removed during omphalectomy. The authors advise administration of large doses of estrogen or progesterone, or androgens in cases of difficult diagnosis of endometriosis of the navel. The symptoms of umbilical endometriosis increase after administration of the former substances and diminish after administration of the latter. The differential diagnosis is from angioma and melanosarcoma.

Hydatid Mole and Chorionepithelioma: A Five Year Survey of Cases in Three Phoenix Hospitals from 1947 to 1952. H. A. Siegal. Arizona Med. **2:**205-212 (June) 1954 [Phoenix, Ariz.].

Siegal reviews observations on 19 patients with hydatid mole, two of whom had chorionepithelioma. These cases occurred between 1947 and 1952 at several hospitals in Phoenix, Ariz., at which 30,659 deliveries took place. There was one case of mole in 1,614 deliveries and one case of chorionepithelioma in 15,329 deliveries. The author feels that the occurrence of signs and symptoms of spontaneous abortion during the fourth and fifth month of pregnancy should lead one to suspect the possibility of hydatid mole, as it appears that the abortion of a mole occurs at a later date in pregnancy than that of the average nonmolar abortion. Hydatid mole should not be ruled out simply because the uterus is not larger than the corresponding period of amenorrhea would justify. In nearly two-thirds of the cases in this series, the uterus was smaller or of corresponding size. In molar degeneration, the longer the duration of pregnancy the smaller the uterus appears in relation to the period of amenorrhea. The occurrence of toxemic manifestations during the early months of pregnancy might serve as an indicator that an abnormal pregnancy or mole exists. Dilatation and curettage immediately after expulsion or removal of a mole leads to a more satisfactory recovery with a lower incidence of recurrent vaginal bleeding. Cases of spontaneous abortion, especially those in which a fetus and secundines have not been identified, should be followed by curettage, so that hydatid mole, not clinically evident, can be detected and the patients treated accordingly. Persistent bleeding after molar expulsion calls for diligent search for possible chorionepithelioma. Greater reliance should be placed on the biological pregnancy tests, especially with a gradually increasing titer. Abdominal hysterotomy seems the best approach in a patient with mole at age 35 or beyond. Hysterectomy may be advisable depending on associated factors. A course of deep x-ray therapy seems advisable following extirpative surgery for chorionepithelioma and biological tests at monthly intervals would appear to be in the best interest of the patient. The author feels that insufficient reliance is placed on biological pregnancy tests both in attempts to establish the diagnosis in suspected cases of mole as well as in the follow-up.

PEDIATRICS

Corticotropin in Rheumatic Carditis: Beneficial Effects of High Dosage and Short Duration in Acute Exacerbations of Chronic Rheumatic Carditis. N. M. Greenstein. A. M. A. Am. J. Dis. Child. **87:**694-701 (June) 1954 [Chicago].

Twenty-eight children with acute rheumatic fever, ranging in age from 6 to 11 years, were treated with large doses of corticotropin at the Morrisania City Hospital and were observed from March, 1951, through August, 1953. There were 20 girls and 8 boys. Seven had at least two previous attacks of rheumatic fever. Fifteen had one attack, and in six there was no definite history. All 28 had mitral insufficiency; in 16 it was associated with mitral stenosis, and 3 also had aortic insufficiency. All except five revealed fluoroscopic evidence of cardiac enlargement involving one or more chambers. Of the five children

with normal heart outline, two had both mitral stenosis and insufficiency; the other three showed only mitral insufficiency. Each patient was observed for one to seven days before the introduction of corticotropin in order to establish beyond question the diagnosis of rheumatic fever and activity. The children were treated with 300 mg. per day of corticotropin, intramuscularly, for a period of 14 to 18 days. All except one of the children responded to this treatment. No significant rebound phenomena or flare-up of rheumatic activity took place on the abrupt cessation of therapy. A small number of mild side-effects occurred. Certain characteristic changes in the cardiac silhouette developed during treatment. A follow-up period of 12 to 30 months revealed no increase in the size of the various heart chambers, suggesting that progressive rheumatic activity had been checked or prevented. Complicating, severe liver disease is regarded as the cause of failure in the one patient who did not respond to three courses of corticotropin therapy.

Serum Vitamin A and Carotene Levels in Children with Rheumatic Fever. P. Wang, H. L. Glass, L. Goldenberg and others. A. M. A. Am. J. Dis. Child. **87:**659-672 (June) 1954 [Chicago].

The nutrition of children in whom rheumatic fever develops has attracted considerable attention, but it has not been explained whether or how suboptimal nutrition, acting in conjunction with other adverse living conditions, such as poor housing, overcrowding, repeated exposures to infections, and less protection from physical and emotional stresses, increases the susceptibility and modifies the response to the disease. In the present study, values of serum vitamin A and carotene were determined in a group of children with rheumatic fever. The effects of diet, of intercurrent infections, and of exacerbations of the rheumatic process, the severity of heart damage, the presence of decompensation, and the effect of the administration of corticotropin (ACTH) on plasma levels of vitamin A and carotene were studied. The rates of absorption and excretion of vitamin A after ingestion of a large test dose were also investigated. The group studied included patients in the acute stage, in the period of gradual convalescence, and, also, patients with inactive disease observed in the outpatient clinic. The authors feel that the diet of the child with rheumatic fever should be supplemented with 3,000 to 5,000 I. U. of vitamin A. During the acute stage, the need for supplementation is greater, as the child's nutritional intake is often limited during this phase of the disease. High normal values were observed more consistently during the subacute and inactive stages of the disease when vitamin A intake was ample. The aqueous preparation was found to be absorbed more rapidly. No indication was found for giving large amounts of vitamin A, and it is advisable to keep in mind that fat-soluble vitamins are stored in the body and that large amounts taken over a period of time can be toxic. The serum vitamin A level of rheumatic children is found to be decreased under the following conditions: (*a*) during the acute and early subacute stages of the disease, (*b*) in patients with severe cardiac damage with passive congestion of the liver, (*c*) during intercurrent upper respiratory infections, (*d*) in patients with acute exacerbation of rheumatic processes, and (*e*) in patients with an inadequate vitamin A and carotene intake of some duration. Corticotropin and cortisone profoundly affect the levels of serum vitamin A and carotene during the various stages of active rheumatic fever. With a few exceptions, vitamin A, either in aqueous or oily medium, was well absorbed by children in varying stages of rheumatic fever. There is no evidence that children with rheumatic fever have a higher vitamin A requirement than normal children.

Neoplasia in Children: Neuroblastoma. M. Salas M. Bol. méd. Hosp. inf. **11:**119-142 (April 1) 1954 (In Spanish) [Mexico, D. F., Mexico].

During the last 10 years 16 cases of neuroblastoma in children were observed at the Hospital Infantil of Mexico City. There were 12 boys and 4 girls. Most of the patients were between the ages of 1 and 3 years. The period of evolution of the disease before admission to the hospital varied between two weeks and eight months. In most of the patients the first symptom of the disease was the appearance of the tumor. In the remaining patients the symptoms consisted of abdominal pain, enlargement of the inguinal lymph nodes, blindness, neurological disorders, and fracture of the ribs. The tumor was located in the adrenals in 12 patients (bilaterally in three), in the retromediastinal or retroperitoneal lymph nodes in three and in the orbit in one. Multiple metastases were observed in all cases; they were enormous in some. The clinical diagnosis was Wilms's tumor in six patients, neuroblastoma in five, and Hodgkin's disease, hepatoma, sarcoma, glioblastoma, and abdominal tumor in one patient each. Surgical treatment failed, and the postoperative period was stormy. Twelve patients died: six probably from operative shock, one each from operative hemorrhage and diffuse peritonitis, three from massive metastases to the lungs, the brain, and the liver, respectively, and one from bronchopneumonia. The period of evolution from the start of the symptoms to a fatal outcome was between 2 weeks and 11½ months.

THERAPEUTICS

Experiences with the Use of 10 Per Cent Aqueous Phenol for Chemical Sympathectomy: Preliminary Report. E. Miles and J. S. Rothman. Am. J. Surg. **87:**830-838 (June) 1954 [New York].

Impressed by the encouraging results obtained by Haxton and Boyd in a large number of patients, Miles and Rothman employed 10% aqueous phenol for chemical sympathectomy in 9 men and 2 women with vascular disorders of more than 10 years' duration in the lower extremities (17 limbs). Ten patients had arteriosclerosis obliterans and one had chronic thrombophlebitis. All were either bedridden or almost entirely confined to their homes. With few exceptions they had all received for years a large variety of drugs orally or parenterally without benefit. Most of them had serious medical complications of long duration, namely, hypertension, coronary disease, and diabetes mellitus. The preliminary report by the authors of the results of treatment obtained in the 11 patients confirms almost entirely the original observations by Haxton and Boyd, i. e., effective and sustained interruption of lumbar sympathetic outflow could be achieved in most patients so treated. Eight of the 11 patients were improved with sustained elevations of skin temperature of the feet and legs from one to seven degrees Fahrenheit, improved walking ability sustained over six months or more, favorable effects on claudication and resting pain, and 80% diminution of swelling in chronic venous insufficiency. The method is safe and free from serious reactions or painful sequelae when careful technique is practiced. The comparatively simple procedure entailed and the almost entire absence of side-effects should merit further application of this treatment to patients aged over 60 or to those who are surgically poor risks. It is especially indicated for acute closure of peripheral vessels in advanced arteriosclerotics, in whom it may often prove limb-saving. In terms of complete cure, one must admit the inadequacy of all therapies currently available, including the surgical.

Study of an Alkaloid of "Rauwolfia Serpentina" in the Treatment of Arterial Hypertension. R. Herbeuval, G. Cuny, M. Manciaux and R. Guidat. Presse méd. **62:**759-760 (May 19) 1954 (In French) [Paris, France].

The authors used reserpine, one of the alkaloids of Rauwolfia serpentina, in the treatment of 35 hypertensive patients. In the 5 whose disease was of renal origin, the drug was a therapeutic failure, but among the other 30, it was effective in 3 out of 5 patients with grade 1 hypertension (60%), in 6 out of 11 with grade 2 hypertension (54%), and in 6 out of 14 with grade 3 hypertension (43%). Reserpine brought about a considerable fall in both peripheral and retinal pressure (but more in the latter), plus the diminution or disappearance of subjective symptoms, a general calming, and a regularization of cardiac rhythm. The treatment is a prolonged one; all patients were treated for at least two months, since it takes at least one month for the blood pressure, which falls substantially directly after treatment is instituted and rises progressively after this initial drop, to level off at about the same figure as existed in the first place, or at a significantly lower one. At this point, success or failure is

adjudged, and the decision made as to whether or not to continue treatment. Some side-effects from the drug were noted—asthenia, dry throat and nasal congestion, edema of the legs, breathlessness, and diarrhea—but it had no toxicity in therapeutic doses. Reserpine possesses a marked neurosedative effect. The authors' impression, from a few cases in which they used combined treatment, is that this drug is a complement to the hydrazinophthalazines and that therapy with both substances is more effective than with either one alone.

Combined Use of Placenta Extract and Vitamins A and D in Local Treatment of Ulcers Caused by Altered Trophism. A. Montagnini and U. Spagnoli. Prog. med. **10:**229-234 (April 30) 1954 (In Italian) [Naples, Italy].

An ointment containing placenta extract and vitamins A and D (Histoplac) was used to treat 18 patients with ulcers of the lower extremities caused by altered trophism. The lesion was first cleansed with compresses of disinfecting solutions for from 2 to 10 days; then the ointment was applied, and the area was closed with a plaster or bandage. The medication was changed every two or three days depending on the quantity of secretion from the wound. On removing the plaster or bandage, the base of the ulcer displayed marked granulation. It was touched up with a silver nitrate pencil before the medicament was applied again. To better evaluate the effectiveness of the new product, comparative studies were made with other ointments, with or without vitamins, which were applied in the same way on ulcers other than those of the legs in the same patients or in other patients with lesions analogous to those of these patients. The results were good. Twelve patients were cured in a short time while still hospitalized; two were discharged much improved, and, when they were seen a few days later, they were also cured; and the other four were improved, but the late result is not known. Unlike the other ointments, the treatment influenced markedly the pain. This was attenuated in all patients and sometimes disappeared in 24 to 48 hours. The granulation process was rapid and the epithelization was also stimulated. The authors ascribe the good effects on pain and the granulation process to the placental extract and those of epithelization to the vitamins.

ANESTHESIA

Experiences with 1,2,3-Tri (Diethylaminoethoxy) Benzene Triethyliodide (Flaxedil) in Major Surgery. G. Scherer. Deutsche med. Wchnschr. **79:**612-615 (April 16) 1954 (In German) [Stuttgart, Germany].

Major surgical interventions on the trunk and the extremities, thoracic and thoracicoabdominal operations, gastrectomies, choledochal operations, excisions of colon and rectum, prostatectomy, and other urologic operations were performed with the aid of combined anesthesia on 438 patients between the ages of 14 and 82. Premedication was employed with morphine (0.02 gm.) and atropine (0.5 mg.) in divided doses, two hours and one hour before the operation. Anesthesia was induced by intravenous injections of 3 to 4 cc. of one of the barbiturates. With the cannula still in place or by using the continuous intravenous instillation, 20 to 40 mg. of gallamine triethiodide (Flaxedil) was injected. Anesthesia then was continued, after intubation, with a mixture of nitrous oxide and oxygen, with or without addition of ether, or with long-acting barbiturates. Relaxation of muscles produced by gallamine triethiodide was greatest within four to five minutes, and intubation could be carried out 45 seconds after the injection. Relaxation of muscles of 20 minutes' duration was obtained with 40 mg. of gallamine. After 20 minutes a second injection of 20 mg. of gallamine (40 mg. were used only in very strong patients) was given, and the duration of its action was again 20 minutes. The effect of the drug was sufficient for 30 minutes on repeated injections. Repeated doses should, therefore, be given according to the effect of the drug rather than to time, and that particularly in patients with impaired kidneys. Doses of 20 to 40 mg. of gallamine triethiodide were sufficient to obtain relaxation of the muscles of the abdomen and of the extremities. There were less undesirable side-effects with gallamine than with natural curarizing agents. Considerable variations of blood pressure were not observed, but a temporary increase of pulse rate (20 beats on the average) occurred in 25% of the patients. Liberation of histamine was reduced to one-half or even to one-fifth of that observed with natural curarizing agents. The effect of gallamine triethiodide can be rapidly and safely controlled with neostigmine, but, with careful dosage of gallamine, neostigmine can be omitted.

Neurological Complications of Spinal Anesthesia: A Statistical Study of More Than 10,000 Consecutive Cases. M. S. Sadove and M. J. Levin. Illinois M. J. **105:**169-174 (April) 1954 [Chicago].

A four year study of 10,166 consecutive spinal anesthesias done at a veterans' hospital during the years 1948 to 1951 revealed 18 cases of neurological complications that had some possible connection with spinal anesthesia. Five cases, which are reported in detail, represent conditions frequently blamed as sequelae of spinal anesthesia. When they were carefully analyzed, it was found that they either existed prior to anesthesia and were not aggravated thereby or were completely unrelated to anesthesia. The point is made that it is often an error to give such patients spinal anesthesia; a thorough neurological examination must be made before the type of anesthesia is decided on. The other 13 complications fell into five general categories including 4 cerebrovascular accidents, 3 cases of cardiac arrest, 3 persistent headaches lasting one week or more, 2 cases of chronic backache, and one benign aseptic meningitis. These findings represent the experience of a group of average training in a well-conducted hospital using careful techniques. No attempt is made to draw any conclusions from these data. It is felt, however, that the neurological sequelae of spinal anesthesia are not of sufficient magnitude to warrant the indictments of this anesthetic technique that have been made by those who are opposed to its use, provided results similar to the ones reported here are consistently obtained. The authors' experience has been that the morbidity and mortality of spinal anesthesia compares favorably with those of other anesthetic techniques.

Management of Pain of Malignant Disease with Nerve Blocks. J. J. Bonica. Anesthesiology **15:**134-145 (March) and **15:**280-301 (May) 1954 [Philadelphia].

Bonica practiced nerve blocks on 194 patients with intractable pain caused by neoplastic disease. Narcotic analgesics, cobra venom, intravenous administration of alcohol and non-narcotic analgesics, particularly acetylsalicylic acid, when combined with hypnotics are valuable in the initial mild pain of cancer. Later, when pain becomes persistent, the use of narcotic analgesics is again helpful. Unfortunately, their effectiveness and ease of administration are conductive to improper use. The practice to "snow the patient under because the end is inevitable" denotes lack of understanding. Since it is difficult to estimate the length of life, there may be premature addiction with stupefaction, respiratory depression, headache, anorexia, nausea, vomiting, and cachexia. Because tolerance develops, the patient may not obtain adequate relief in the late stages of cancer when comfort is so essential. Bonica believes that if the patient is in good physical condition, neurosurgical operation should be employed to insure prolonged relief. Rhizotomy, sympathectomy, spinothalamic chordotomy in the upper spinal cord or brain stem, and prefrontal lobotomy relieve intractable pain effectively. These operations impose mental, physical, and financial burdens and may cause serious complications and occasionally result in failure. Nerve blocks are primarily indicated for patients who are unsuited or unwilling to undergo surgical procedures. For pain of the face, mouth, tongue, throat, and neck, injections of alcohol into the trigeminal nerve or its branches, the glossopharyngeal and vagus nerves, and/or the upper cervical spinal nerves are usually very effective. Pain below the neck can be

controlled for weeks or months with subarachnoid alcohol block, paravertebral block, or injections into the peripheral or intercostal nerves. Since the sympathetic nervous system is often involved in the pain mechanism, sympathetic nerve blocks may be necessary to control the pain completely. Of the 194 patients with severe cancer pain treated with analgesic block, 52.7% obtained complete relief, 33.5% partial relief, and the remainder obtained minimal or no relief. Minor complications occurred in 21.1% of the patients and serious complications in 14.9%. These complications included corneal ulcers in 4, unilateral masticatory weakness in 22, weakness or paralysis of extremities in 26, bladder or rectal dysfunction in 12, alcoholic neuritis in 7, and orthostatic hypotension in 1.

Controlled Hypotension During Surgery. H. H. Stone. Maryland M. J. **3**:163-166 (April) 1954 [Baltimore].

Stone points out that interest in controlled hypotension during surgery was renewed after World War II, partly due to the increase in the extensive types of surgical resections. Some induced hypotension by removing blood from the patient and reintroducing it subsequently. Others produced hypotension by the use of spinal anesthesia. In 1948 with the introduction of a group of drugs with potent autonomic ganglionic blocking properties known as the methonium compounds, hypotension could be produced without the cumbersome technique of spinal anesthesia or the uncertainties of arteriotomy. Tetramethonium, pentamethonium, and hexamethonium supplanted other hypotensive agents. The method gained popularity in Great Britain and soon spread to the United States. The factors that influence the ability of the body to make a satisfactory compensation in terms of maintained organ blood flow are the duration and degree of hypotension, the condition of the blood vessels, the metabolic needs of the tissues during hypotension, especially those of the heart and brain, and the production and liberation of specific depressant substances arising from ischemic tissues. The effect of the reduction in mean arterial blood pressure by hexamethonium on the circulation of the heart, brain, liver, and kidneys was studied experimentally, and the results are presented. Many complications have been reported incident to the use of controlled hypotension, but the incidence of these complications is very difficult to establish on a cause and effect basis. Too many complex factors could influence their development. Their incidence is significantly greater when the level of the systolic blood pressure is maintained below 80 mm. Hg. A survey of 21,000 cases in which induced hypotension was used, revealed 46 deaths attributable to the method, or an incidence of 1 in 459 cases. The incidence of complications was vastly higher (549) or 1 in 38 cases. Since the majority of the complications encountered are referrable to derangements of function of the brain, heart, and kidney, it appears unwise to use controlled hypotension in aged, sclerotic patients who give a history of coronary, cerebral, or renal insufficiency. Hypotension is potentially dangerous and the indication for its use must outweigh its serious implications. The decision to use controlled hypotension should be made by the surgeon not the anesthesiologist.

Hypothermia. K. K. Keown, B. A. Cookson, D. F. Downing and C. P. Bailey. Maryland M. J. **3**:160-162 (April) 1954 [Baltimore].

Keown and associates repeated the induction of hypothermia in animal experiments with a view of perfecting a technique suitable for application in patients with intracardiac defects. These experiments proved that (1) the circulation could safely be interrupted for 12 minutes while open cardiotomy was accomplished at a temperature of 78.8 F; (2) it is possible to control bodily temperature by means of slow cooling; (3) arterial transfusions are helpful in the prevention of coronary air embolization; (4) citrated whole blood predisposed to ventricular fibrillation in a cold heart, due to a calcium-potassium imbalance; (5) the heart rate and blood pressure are lowered in almost direct proportion to the decrease of the body temperature; and (6) application in human beings seems feasible. The authors induced hypothermia in four infants less than 6 months of age, who received no depressant drugs other than small doses of meperidine (1 mg. per pound of body weight). Open thoracotomy was performed, and there was no evidence of neurological damage in the two infants who survived. Children older than one year of age are anesthetized with thiopental (Pentothal) sodium given intravenously until unconsciousness is reached, then the endotracheal catheter is passed to assure a patent airway. Immediately after tracheal intubation a thermocouple is inserted into the rectum of the patient and checked for accuracy. The dial of the thermocouple is attached to the anesthesia machine so that the decrease in temperature can be observed constantly. The electrodes of the electrocardiograph are applied and the patient is placed on a refrigeration mattress. About 60 to 90 minutes are required to lower an infant's rectal temperature to 74 F. When a bodily temperature of 82.4 F is reached, voluntary respiratory activity ceases, then the anesthesiologist must assume control of respiratory activity. During rewarming, respirations again become spontaneous at the same temperature. The electrocardiographic tracings show progressive changes. Immediately following surgery, rewarming is started by circulating warm water through the coils in the blanket. Most infants will respond satisfactorily in a recovery room, and will have a normal temperature within 10 hours. It has been possible to interrupt the circulation of an infant completely for as long as 22 minutes without evidence of renal, hepatic, cerebral, or cardiac damage. The authors believe that hypothermia is indicated in infants who require cardiac or extracardiac great vessel surgery, in operations that require a complete interruption of the circulation, and in major surgery of any type in debilitated infants or children. They regard the use of hypothermia as contraindicated in the presence of acquired heart disease, poor myocardial tone and defects, and also in noncyanotic infants and children for operations not requiring the interruption of the circulation.

Hypothermia, Ganglioplegics, and Homoplastic Skin Grafts. V. Bergonzelli and C. Orecchia. Arch. sc. med. **79**:261-267 (March) 1954 (In Italian) [Turin, Italy].

Experiments were carried out on guinea pigs to determine the eventual interference of the autonomic nervous system with the survival of homoplastic grafts. A homoplastic graft of total skin was made on the abdomen of some guinea pigs that served as controls. In other animals the graft was made after prolonged administration of ganglioplegics; in a third group after hypothermia was induced (rectal temperature of 34 to 35 C [93.2 to 95 F]); and in the last group after the effects of hypothermia were potentiated by administration of ganglioplegics (rectal temperature of 32 to 33 C [89.6 to 91.4 F]). The length of survival of the grafts was not influenced greatly by the administration of the ganglioplegics alone, and these combined with hypothermia represented a danger to the life of the animals, four of which died. The length of survival of the grafts was greatest in the group of animals subjected to hypothermia. In these the grafts lasted as long as three weeks as compared to 10 days in the controls. The authors attribute these favorable effects to a slowing down of the metabolic exchange in the tissues and a reduction of the reactive processes of the organism around the graft.

PHYSIOLOGY

Synovial Fluid: I. Comparison of Sodium and Potassium Concentrations in Normal and Diseased Joint Fluid. K. L. Yielding, D. Platt and H. L. Holley. Proc. Soc. Exper. Biol. & Med. **85**:665-667 (April) 1954 [Utica, N. Y.].

Previous investigations on synovial fluid have utilized material obtained from cattle, horses, dogs, edema effusions, and human autopsy material. For the studies described here, synovial fluid samples were aspirated from the knee joints of 10 healthy living persons, 10 autopsy cases, 25 patients with effusions in untreated acute rheumatoid arthritis, and 5 persons with osteoarthritis with effusion. It was found that, by allowing the subjects to remain inactive for 8 to 12 hours prior to the procedure, volumes of fluid up to 1 cc. could be obtained from the knee joint. A 20 gauge needle was introduced under the medial border of the patella directly into the joint cavity. Prior infiltration of the skin with 1% procaine made the procedure relatively painless. The sodium and potassium concentrations were determined in the synovial fluid specimens as well as in the serum. In the

synovial fluid obtained from patients with rheumatoid arthritis, there was an increase in sodium concentration with a corresponding increase in the synovial fluid-serum ratio for sodium. The increase in the sodium concentration in the joint fluid of patients with rheumatoid arthritis as compared to that found in normal fluids appears to be statistically significant, the more so, since the serum values were essentially equal in normal subjects and in those with rheumatoid arthritis. There appear to be at least three possible factors affecting the alteration in the electrolyte concentrations of synovial fluid in diseased states—alteration of protein content, qualitative and quantitative alteration of the polysaccharide component of the fluid, and changes in permeability of the synovial membrane. It has been shown electrophoretically that the total protein content, and especially the globulin fraction, is increased in the joint fluid in rheumatoid arthritis.

The Effect of Potassium Chloride on Hyponatremia. J. H. Laragh. J. Clin. Invest. **33:**807-818 (May) 1954 [New York].

An abnormally low concentration of sodium in serum and extracellular fluid often occurs in cardiac edema and in other states characterized by excessive retention of fluid. Rigorous sodium restriction, mercurial diuretics, and cation-exchange resins may exaggerate or produce this tendency. Sodium administration often enhances accumulation of fluid. Hypertonic sodium chloride, though effective at times, may be neither beneficial nor safe. Because hyponatremia per se may play a role in the production of adverse symptoms, it seemed desirable to search for another diuretic agent that might promote the loss of excessive body water without aggravating disturbances in sodium metabolism. Potassium chloride was administered orally to hyponatremic patients with and without edema. In these patients, small to rather striking increases in the serum sodium concentration were observed without the addition of exogenous sodium. The nature of the phenomenon is not wholly clarified but seems best explained by a release of sodium from cells in exchange for potassium. In the edematous hyponatremic subject, no significant change in renal excretion of sodium or water was observed after potassium chloride administration, even when serum sodium levels were simultaneously raised toward normal. This occurrred with both low and higher sodium intakes. The hyponatremic patients studied seemed unable to metabolize potassium with normal facility, and, therefore, its administration is not without hazard; when compared to normal subjects the hyperkalemia produced seemed to be more profound and more prolonged. Moreover, with the doses employed in this study, potassium chloride did not exert a diuretic action.

Consumption and Selection of Food in Competitive Lumber Work. M. J. Karvonen and O. Turpeinen. J. Appl. Physiol. **6:**603-612 (April) 1954 [Washington, D. C.].

Lumberjacking is an occupation involving highest caloric expenditures. During working competitions, the amount of wood cut per day may amount to three times that cut by an average lumberjack. It may be asked whether the calories required by the competitive work can be adequately covered by food intake, or whether the high intensity of work leads to a loss of weight. A study was made of the consumption and selection of food during the Finnish National Woodcutting Competition in November, 1951. The mean caloric value of the food intake was 5,460±750 calories per day. The calorie intake was not significantly correlated with the performance. During the competition there was an average weight loss of 1.2±1.5 kg. The weight loss and the performance showed a positive correlation. The selected diet consisted of 46.6±4% carbohydrate, 41.6 ±3.3% fat, and 11.8±1% protein. On the whole, the figures obtained in the present study and those published for ordinary lumberman's work are similar, indicating that the competitors attained their top performances essentially through more economical methods and not through a higher energy expenditure. The fat content of the diet of the competitors was exceptionally high—42% or 264 gm. The United States National Research Council recommends a fat intake equivalent to 30 to 35% of the total intake of calories for persons using more than 3,000 calories per day. The high fat intake may be explained by the cold climate and the heavy work, or both. However, the diet of the classes from which the majority of the competitors came, is not characterized by a particularly high fat intake. It was evident that the work was the main factor in the selection of a diet rich in fat; obviously a bulky meal would be an obstacle to the efficiency of a man who does heavy labor often in an uncomfortable position. The fluid to replace the loss of sweat was taken mostly during work. Many of the competitors had learned to use drinks combining fluid and calories. Warm milk fortified with sugar was a favorite drink. In long distance ski running, the skiers also are advised to take milk with sugar at frequent intervals. This method agrees with the recommendations of recent physiological research for the continuous replacement of water loss in dehydration and carbohydrate in muscular work.

Artificial Respiration by Mouth-to-Mask Method: A Study of of the Respiratory Gas Exchange of Paralyzed Patients Ventilated by Operator's Expired Air. J. O. Elam, E. S. Brown and J. D. Elder Jr. New England J. Med. **250:**749-754 (May 6) 1954 [Boston].

Mouth-to-mask or mouth-to-tracheal-tube ventilation was performed on nine adult surgical patients in the immediate postoperative period before recovery from general anesthesia. Expired carbon dioxide and respiratory flow were first recorded to establish control values. The total volume of the inflation and expiration of the patient passed through the carbon dioxide analyzer and pneumotachograph. During artificial ventilation, the operator's alveolar carbon dioxide pressure was also recorded with each inflation of the patient's lungs. An intravenous drip of succinylcholine in sodium chloride solution was started, and the rate of infusion adjusted to produce cessation of respiratory flow. At the onset of apnea, as indicated by the pneumotachograph record, mouth-to-mask or mouth-to-tracheal-tube ventilation was instituted. An anesthesia mask with 110 cc. of dead space was fitted over the patient's nose and mouth and held securely by bilateral manual support. The operator took a deep breath of ambient air, applied his lips around the ferrule of the mask, and inflated the patient's airway and lungs until lift of the upper chest was observed. The operator then removed his lips from the mask, turned his head to one side and inspired ambient air while the patient exhaled through the mask. Either the rate or the volume of inflation was decreased if the operator experienced dizziness. The same method was used for performing mouth-to-tracheal-tube ventilation, except that the carbon dioxide analyzer and pneumotachograph were interposed between the patient's endotracheal tube and the operator. After an interval of five to 30 minutes of artificial ventilation, arterial samples were collected. Van Slyke analyses of oxygen content and capacity and carbon dioxide content were completed within three hours of arterial sampling; pH measurements were started within five minutes. Normal respiratory blood-gas exchange of the patient was consistently produced by mouth-to-mask or mouth-to-tracheal-tube ventilation. These results appear to be sufficient to establish the general applicability and adequacy of the method. The efficiency with which ventilation by expiratory inflations reestablished normal oxygen and carbon dioxide exchange of the patient was striking. The operator knew immediately whether the patient was being ventilated. Sufficient inflating pressure was automatically exerted to ensure delivery of an adequate volume, since the operator tended to compensate for changes in airway resistance and in lung compliance. The method appears to be the ideal emergency procedure for artificial ventilation because the patient's alveolar oxygen pressure can be rapidly elevated and normal pulmonary gas composition can be rapidly established. Preliminary evidence suggests that for prolonged periods of mouth-to-mask ventilation hypocapnia in the operator can be prevented by the imposition of additional external dead space on the operator. The potential hazard of rupture of the lung in patients with small or abnormal lungs may be excluded if inspiratory inflation is terminated when there is perceptible expansion of the chest.

BOOK REVIEWS

Laboratory Aids in Endocrine Diagnosis. By Roberto F. Escamilla, M.D., Associate Clinical Professor of Medicine, University of California Medical School, San Francisco. Publication number 212, American Lecture Series, monograph in Bannerstone Division of American Lectures in Endocrinology, edited by Willard O. Thompson, M.D., Clinical Professor of Medicine, University of Illinois College of Medicine, Chicago. Cloth. $4.75. Pp. 131, with 21 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1954.

This monograph covers both routine and special clinical laboratory procedures that may be helpful in the diagnosis of endocrine diseases. The tests include pertinent chemical analyses of the blood and urine, reactions to clinical reagents or drugs, the use of devices, such as for basal metabolism and x-ray, and pathological techniques for the study of stained smears and biopsy specimens. A final chapter provides an index to those tests that are considered important, occasionally helpful, or of incidental interest. No general index is provided, but the smallness of the book makes this deficiency relatively unimportant. The table of contents at the beginning is sufficiently detailed to permit ready access to the main text. Details of laboratory procedures for routine analyses and for roentgen techniques are omitted. Some of the information provided can be found in texts that cover the general subject of clinical diagnosis by laboratory methods. In some instances the author uses trade in place of generic names for drugs. Reference that is made to the "benzodioxane" test should be "piperoxan (or Benodaine)" test. Reference to the "Regitine" test is accurate, but could be improved by similar treatment as "phentolamine (Regitine)" test. The printing, paper, and binding are excellent. Clinicians in general should find the book useful chiefly for convenient reference in the diagnostic study of endocrinopathies.

The Alkaloids: Chemistry and Physiology. Volume IV. Edited by R. H. F. Manske and H. L. Holmes. Cloth. $8.50. Pp. 357. Academic Press, Inc., 125 E. 23rd St., New York 10, 1954.

The next-to-the-last volume of this valuable series covers drugs having an isoquinoline structure, i. e., alkaloids of anhalonium, cactus, protoberberine, aporphine, protopine, and cularine, as well as simple isoquinolines and the benzylisoquinoline, bisbenzylisoquinoline, and α-naphthaphenanthridine alkaloids. Two chapters are given to alkaloids of erythrophleum and of aconitum and delphinium, whose structures are not yet known. The chapters are written by experts in their fields. Several chapters include sections on pharmacology. As is the case with the other volumes in the series, there are bibliographies at the ends of the chapters, author and subject indexes, and clear structural formulas. The book is well produced.

Population Statistics and Their Compilation. By Hugh H. Wolfenden. With appendix on Some Theory in the Sampling of Human Populations, by W. Edwards Deming, Ph.D. Second edition. Cloth. $7.50. Pp. 258. Published for Society of Actuaries by University of Chicago Press, 58th St. and Ellis Ave., Chicago 37, 1954.

This is a revised edition of a standard reference work on methodology for the advanced student of vital statistics. A number of developments have occurred in the theoretical and practical problems involved in the compilation of population statistics since this book was first published under the same title as "Actuarial Study No. 3" in 1925; this edition has been rewritten and enlarged to include descriptions and references covering new material. The book is concerned primarily with the methods of compiling various types of population statistics that are of value to the actuary and is complete and comprehensive in its treatment of the historical and actuarial-mathematical problems of population statistics. An outline of the history and principles of census-taking and birth, marriage, and death registration in various countries; an analysis of the reliability of census and registration statistics; procedures for estimating populations, the validity of population projections and the theory of reproductivity; and development of mathematical relationships between births, deaths, population, and the formulae for mortality rates are included in this book. The material on the graphic, curve-fitting, and interpolation methods of constructing mortality tables includes the latest developments in tangential and osculatory interpolation, as well as the use of linear compounding coefficients to minimize the mean square error in a specified order of differences. Discussions of methods of constructing abridged life tables and comparing mortality rates in different communities also include the most recent procedures.

An Atlas of Congenital Anomalies of the Heart and Great Vessels. By Jesse E. Edwards, and others. Cloth. $13.50. Pp. 202, with 272 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1954.

In this great medical atlas, the description of each anomaly is aided by photographs of models in color, photographs of the actual specimen, diagrams, roentgenograms, electrocardiograms, and in many instances data derived from cardiac catheterization and other significant clinical data. To assemble such a book required a tremendous amount of work and could have been done only by a closely integrated group such as this one from the Mayo Clinic. Several anomalies such as Ebstein's malformation of the tricuspid valve, Marfan's syndrome, and anomalies of the coronary arteries are added in this new edition. The authors have wisely kept the clinical data to outline form and have refrained from discussing treatment. The book describes as clearly and concisely as possible each congenital defect. Those interested in medical history will be pleased with the section of short biographical sketches and pictures of the important persons in the field. A carefully selected bibliography includes most of the important literature in the field of congenital heart disease. This atlas should be available to every physician for ready reference.

Man Above Humanity: A History of Psychotherapy. By Walter Bromberg, B.S., M.D. Foreword by Winfred Overholser, M.D., Sc.D. Cloth. $5.75. Pp. 342, with 16 illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C. 2; 2083 Guy St., Montreal, Canada, 1954.

This history traces psychotherapy from the Stone Age to the present and discusses magic, faith-healing, witchcraft, early asylums for the insane, Christian Science, rest cures, animal magnetism, hypnotism, various modifications of psychoanalysis, mental hygiene, and group methods of psychotherapy. The author in his preface states that this is a rewriting of his earlier book entitled "The Mind of Man," published in 1937. The present title is taken from a quotation in Seneca's "Naturales Quaestiones." The author believes the factors entering into psychotherapy must always include "the primitive sense of magic, an aspect of faith displaced to the therapist and a re-enactment of infantile feelings within the transference situation." The best chapter is that on mental hygiene. There is an index.

Emotions and Reason. By V. J. McGill, Associate Professor of Psychology and Philosophy, Hunter College, New York. Publication number 215, American Lecture Series, monograph in American Lectures in Philosophy, edited by Marvin Farber, Ph.D. Cloth. $3.25. Pp. 122. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W. Toronto 2B, 1954.

This monograph begins with the proposition that "The two main determinants of human behavior are motivation and ability, and there is a growing conviction that the two cannot be profitably separated." The author's subsequent thesis, insofar as it can be detected, is that emotions and reason are similarly interrelated. Unfortunately, these portmanteau terms are made to carry so many other concepts equally vague or inclusive that readers may have difficulty in following the ensuing vagaries of thought and exposition. This volume is recommended for those who like metapsychological polemics, but it will, on the whole, furnish little useful information to the medical practitioner.

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

QUERIES AND MINOR NOTES

CALCIUM "SHOTS"

To the Editor:—*Many of my patients want calcium "shots," because they have a friend who has been getting calcium shots. In few of these patients am I able to find any sign of calcium deficiency. I send them to the hospital laboratory for blood calcium determinations and they are always reported within normal limits. Is there any rationale for the widespread use of calcium shots and even calcium by mouth except for the presence of known calcium deficiency?*

J. Street Brewer, M.D., Roseboro, N. C.

This inquiry was referred to five consultants, whose respective replies follow.—Ed.

Answer.—Strictly speaking the rationale for calcium therapy is to combat a calcium deficiency state. Under normal conditions the amount of calcium in the body remains constant. The activity of the parathyroid glands is closely related to the behavior of calcium in the body. The highest calcium requirements are observed during infancy, early adolescence, pregnancy and lactation, and menopause. The functions of calcium are numerous. It is essential for ossification of bone, for adequate contraction of cardiac muscle, and for normal blood clotting; it diminishes capillary permeability, and it decreases the excitability of the autonomic nervous system. Nature attempts to keep the concentration of calcium in the blood at a constant level. In the investigation of diseases in which abnormalities in calcium metabolism are suspected, it is desirable to determine a concentration of serum protein and serum phosphatase in addition to the concentration of calcium and inorganic phosphates in the serum.

Answer.—When the bones are well calcified and the blood levels of calcium, phosphorus, and total protein are normal, there seems to be little justification for the giving of calcium salts. Injected calcium is promptly lost from the blood stream, and much of it is either stored in the bones or excreted. The situation is quite different when there is a metabolic drain on the calcium stored in bones or when the blood levels are low. When calcium is restricted in the diet by eliminating milk, eggs, and green vegetables or when absorption of calcium is reduced by diarrhea or other intestinal disease, then parenteral calcium has some justification.

Answer.—It is very rarely that calcium must be given intravenously. Tetany of the low serum calcium variety is the only indication that comes to mind, and here it is seldom necessary. It is not indicated in any form in osteoporosis; in osteomalacia it may be beneficial by mouth. In pregnancy it is not indicated by either route.

Answer.—There is widespread unwarranted use of calcium compounds given parenterally. This practice is promoted by certain manufacturers of calcium compounds prepared for this purpose. The indications for use of calcium compounds are well stated in "New and Nonofficial Remedies" (1954, page 484) as follows: "Calcium salts are specific in the treatment of hypocalcemic tetany. Vitamin D or parathyroid hormone may also be indicated according to the etiology involved. In severe tetany, parenteral administration, preferably intravenous, is indicated to bring symptoms under rapid control. Latent tetany or mild symptoms may be controlled by oral medication." There is little or no justification for parenteral administration of calcium compounds except as an emergency measure. Oral administration in known calcium deficiency may be a matter for individual judgment; as a rule a remedial diet is preferable to the administration of calcium compounds. The answer to the query is an unqualified no!

Answer.—The understanding of calcium metabolism is so complex and its disturbance so difficult to classify that to empirically administer calcium "shots" is not medically sound. There is a dire need for certain studies to be made, for there are many cases of disturbance of calcium metabolism undiagnosed and poorly understood. The studies would include urinalysis, particularly for Bence-Jones protein, blood calcium, phosphorus, and phosphatase; total serum protein with albumin-globulin ratio; blood smears (rouleau); sedimentation rates and roentgen studies of bone and gastrointestinal and genitourinary systems. Especially, one must understand the close relationship of calcium and phosphorus; the importance of the functional state of the parathyroid glands; the function of the enzyme phosphatase; and the use and action of dihydrotachysterol, vitamin D, and parathyroid. In summary, calcium administration and methods of maintaining calcium balance are well founded if they are supported by careful diagnostic studies.

GLARE REDUCTION AND DEPTH PERCEPTION TEST

To the Editor:—*What is a simple and reliable test for glare recovery and depth perception, suitable for office practice?*

Karl J. Chiapella, M.D., Chico, Calif.

Answer.—Berens and Zuckerman (Diagnostic Examination of the Eye, Philadelphia, J. B. Lippincott Company, 1946) discuss several simple methods of testing for glare recovery and depth perception. In testing for glare recovery, the patient should be directed to look for three minutes at a bright light (two bulbs of 5,400 millilamberts each) placed 3 ft. away. The patient should then be placed in a dark room 18 in. from a test light (0.004 millilamberts). This standard test light is admitted to a narrow aperture measuring 1⅛ in. in a cylindrical tube. Recognition of the direction of the slit is a check of the accuracy of the patient's response. The patient is directed to look directly above or below the test light but not directly at it. He then states when he is able to see the light. Normally 60 seconds elapse between the time the bright lights are turned off and the time the test light is recognized. A longer interval suggests a decreased ability to regenerate visual purple. Several commercial devices are available for the measurement of depth perception. One simple method is to direct the patient to touch with a 20 mm. white ball, inserted in a wooden rod 1 m. long, another white ball of the same size at the end of a similar rod, which the examiner holds in his outstretched arm. This test should be repeated in all fields of fixation while the patient's head is prevented from moving so he fixes only by movement of his eyes.

LIGATION OF THE VASA DEFERENS

To the Editor:—*Precisely what happens when the vasa deferens are ligated during a prostatectomy? What is the effect on the testes and endocrine system?*

Joseph G. Lee, M.D., Los Angeles.

Answer.—When the vasa deferens are ligated, at the time of either a transurethral resection of the prostate or an open prostatectomy, the only thing that happens is a severance of the channel that conducts the sperm from the testis and epididymis to the ejaculatory duct in the posterior urethra. There is no evidence of any kind on careful research to show that the testis or the endocrine system is in any way affected by this procedure. Spermatozoa continue to form in the testis for as many years as we know after this has been done, and if the vasa are reunited successfully, normal sperm will pour out again through these channels to be ejaculated in the usual manner.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

PREGNANCY AND BREAST CANCER

TO THE EDITOR:—*Should sterilization be performed after radical mastectomy in women who are still menstruating? If the answer is yes, should it be accomplished by irradiation or surgery? Also, is therapeutic abortion indicated in a woman who becomes pregnant after a radical mastectomy for cancer of the breast?* *M.D., New York.*

ANSWER.—There is still much difference of opinion concerning castration following radical mastectomy for carcinoma. Some surgeons believe that castration should be performed and that removal of the ovaries is far better than radiation castration. Operative sterilization without stopping ovarian function is not recommended. Cheek (*Arch. Surg.* **66**:664 [May] 1953) says the prognosis for patients with cancer of the breast developing during pregnancy, though poor, need not be invariably hopeless. Occasional instances of five year cures have been reported. Pregnancy is not a factor that, in itself, would cause the disease to be inoperable. Termination of pregnancy seems to be indicated, particularly if the growth is discovered during the first half of gestation and if there is no serious conflict with religious tenets of the family. However, White (*Ann. Surg.* **139**:9 [Jan.] 1954), who analyzed 920 cases, says that abortion cannot be shown to have a clear effect on the survival rate. There is general agreement that subsequent pregnancies should be avoided by women who have had mammary carcinoma. Whether pregnancy increases the chances of carcinoma developing in the remaining breast remains unsettled. Any hope for an improved prognosis of carcinoma of the breast during pregnancy lies in early diagnosis, when the growth is still clinically operable. For this reason physicians should examine the breasts of their patients completely and at frequent intervals.

ALLERGY TO FISH

TO THE EDITOR:—*Is there any way to desensitize a 5-year-old child who is extremely allergic to fish? Hives and asthma develop when she smells fish or when she is in a room in which fish has been fried. On one occasion she ate a small piece of fish and became comatose and cyanotic and had a rapid, thready pulse. These symptoms are relieved fairly promptly by an intramuscular injection of methapyrilene (Histadyl) hydrochloride. Antihistaminics have been tried but do not prevent the attacks.*

Charles H. Brant, M.D., Wooster, Ohio.

ANSWER.—Most allergists agree that desensitization to foods by giving injections of the antigen is not successful nor practical. Allergy to fish is one of the most violent types of hypersensitivity. Not only would injections of fish antigens be hazardous, but it is doubtful that the degree of desensitization accomplished would be sufficient to influence the clinical symptoms. In this case preventive measures are the only means of avoiding trouble. In case of a severe reaction the prompt administration of epinephrine hypodermically is advised. Most likely this sensitivity will persist throughout the patient's life.

REMOVAL OF BROKEN HYPODERMIC NEEDLE

TO THE EDITOR:—*Can a hypodermic needle that has been accidentally broken off into the tissues be removed with a powerful magnet?* *Leon Banov, M.D., Charleston, S. C.*

ANSWER.—The best treatment is prevention. Rarely does the shaft of the needle break, but rather the needle breaks at its joint with the shank. If the needle never is inserted to its full length, even breaking off will not result in losing the needle in the tissues. It is feasible to use the Lancaster eye electromagnet (medium-size hand model) to remove broken needles lost in the tissues within limitations. The magnet will not, however, pull out needles unless they are at an acute angle with the skin surface. Furthermore, there must be actual contact between the magnetic applicator and the needle. This usually means that a small incision must be made through the skin; then the probe-type tip (pencil-lead size) can be inserted to find the needle. Since an incision must be made, it is almost as easy to grasp the needle with a hemostat and withdraw it, except that the magnet may obviate tissue exploration. The magnet will not remove a needle parallel with the skin, nor will it pull an end-on needle through intact skin. Good contact between needle and applicator is necessary. All in all, the magnet is effective only part of the time and does not obviate a skin incision.

SILICOSIS

TO THE EDITOR:—*Once there is roentgenologic evidence of silicosis, will progression continue to take place even though there is no further exposure to free silica? It is assumed that tuberculosis is not superimposed. Also, how essential is it to avoid further exposure to silica once there is evidence of silicosis?* *A. M. Phillips, M.D., Warwick, R. I.*

ANSWER.—After the detection of roentgenologic evidence of silicosis, it does not always follow that progression takes place. Further roentgenologic examination over such intervals as six months should be conducted in order to ascertain whether progression is occurring. No workman with or without silicosis should be subjected to significant exposure to silica. It becomes desirable in all instances to reduce the exposure at the work point below that serving as a threat of silicosis. Thereafter, even those workers with known silicosis, if of nondisabling degree, may continue working.

INJECTION OF ESTROGENS INTO ANIMALS USED AS FOOD

TO THE EDITOR:—*Is it safe to caponize male chickens by injecting 12 mg. of diethylstilbestrol into the neck tissues and placing these birds on the market within two months for home consumption? I understand that hormones are injected into female birds, including turkeys, and into cows. What about remote carcinogenic effects?* *M.D., New Jersey.*

ANSWER.—There is no reason to believe that the administration of estrogens including diethylstilbestrol in animals or birds should render the meat unfit for consumption. Adequate evidence indicates that these hormones are completely metabolized into inactive components within a few hours. There is no conclusive evidence that the estrogens ordinarily used are carcinogenic in man in therapeutic amounts.

PULSATING MIDDLE-EAR FLUID

TO THE EDITOR:—*I have observed in several cases of acute otitis media with spontaneous perforation the fluid pulsating as it extrudes through the perforation. I suppose this represents transmitted pulsation from the dilated blood vessels of the inflamed middle ear, but I am surprised that such pulsation should be so macroscopic. Is it so frequent as it seems to me, and is there a more probable explanation?*

Frank C. Leitnaker, M.D., New York.

ANSWER.—Pulsation of the discharge from an acute otitis media is undoubtedly the result of vasodilatation in the middle-ear mucosa and occurs when the middle-ear spaces are completely filled with fluid so that the pulsation in the arterioles in this rigid bony cavity must necessarily be transmitted to the fluid escaping through the tympanic membrane perforation.

ELECTRIC SHOCK

TO THE EDITOR:—*I would like your opinion on the use of stimulants in recession from electric shock. Clinical and experimental evidence shows that the use of epinephrine is contraindicated; however, I would like to know whether or not the use of nikethamide (Coramine), caffeine, or some similar stimulant is indicated, or should all the stimulants be avoided?*

Howard P. Knapper, M.D., St. Petersburg, Fla.

ANSWER.—In electric shock, the heart is usually in fibrillation due to a lack of blood in the heart itself. The blood has accumulated in the blood vessels of the abdomen; hence, an attempt should be made to stimulate the vasoconstrictors by pressure that might force blood into the heart. Until the heart is out of fibrillation, all stimulants are contraindicated, with the exception of carbon dioxide, which is a respiratory stimulant. Personal experience with all stimulants has been unsatisfactory.